Published
10th of each month by
PRACTICAL
PUBLICATIONS
Incorporated
32 N. Meridian St.
Indianapolis 4, Ind.
Telephone Riley 6771

Industrial FINISHING

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...NUARY, 1949
Vol. XXV, No. 3

...ished monthly to finishing ... and paint shop foremen, ...uction superintendents, ...ts, purchasing agents and ...ny executives of metal-..., woodworking and mis-...eous industrial plants ... production cleaning and ...g are major operations in ... and products manufacture.

...cription Rates Per Year ... and Possessions $2.00
...n and Foreign ... $4.00
...ubscription solicitors are employed)

...W. H. Rohr
...President ..... E. A. Dosch
...R. E. Seitz

...tern Representative
C. A. LARSON
254 West 31st St.
New York 1, N. Y.
...ne: Longacre 4-4385-6

25 TWENTY-FIFTH YEAR OF PUBLICATION

For 1949. "Quality merchandise, skillful selling and reduced manufacturing costs are three 'musts' for industry if profits and wages alike are to remain at their present levels in the coming year.

"Value—or quality—must be inherent in products seeking buyers in 1949. For, a well-sold poor product cannot compete with a well-sold good product. The current and increasing talk about 'filling pipelines' can be due to discrimination on the part of buyers as much as to surfeited demand.

"The time is past when price increases alone can be resorted to to provide a crutch for inept manufacturing cost control or a cushion to meet increased wage demands." — *From year end statement by Frank A. Hiter, Senior V. P. of Stewart-Warner Corp.*

* * *

Predicted Construction High. The Department of Commerce predicts an all-time high in 1949 for new construction with a dollar volume of 18¾ billion dollars. The expected total represents an increase of 5% over 1948. Breaking down this total, new private construction should reach 13¾ billion, with non-residential building accounting for four billion dollars.

Another estimate is that construction costs would be about 5% higher than those in 1948. The estimates are based upon the assumption that business will remain at the 1948 level, and that Government spending will not be materially increased. So it appears that construction will hold its own.

Textile Display. At a recent textile exhibition at the Metropolitan Museum of Art in New York, there was shown an old French print of the street cries of Paris, silk-screened on cotton. The workmanship was excellent. A modern textile inspired by an old print. Regardless of the material upon which it is applied, from one to four colors screen-printed through photographic carbon tissue stencils is approaching the ultimate in graphic arts.

* * *

Fogless Glass. Announcement is made of a new liquid glass cleaner that leaves an invisible but fog-resistant film after application. This material, it is said, produces an optically perfect film that gives long lasting protection against fogging and frosting, even under the most severe conditions.

This cleaner should find many uses around laboratories, and in any industrial operation involving great differences in temperature.

* * *

Inspection by Infra Red. The Central Railroad of New Jersey will use infra-red lights to detect minute cracks and flaws in the axles of locomotives and railroad cars. It is expected that inspection time at the Elizabeth, N. J. shops will be reduced materially.

The inspection device employs a patented process known as Magnaflow. If this machine can detect

(Continued on page 8)

For those new individual
light tones, USE . . . .

Du-Bar
WOOD BLEACH

Here is a powerful, one-application bleach that definitely removes all coloring matter from wood surfaces or it may be controlled to any degree of bleaching desired. DU-BAR BLEACH is lasting too —no yellowing with age. Can be sprayed or brushed.

Research, experience and manufacturing skill combine to make DU-BAR BLEACH one of the most successful bleaches on the market. Sold in two units—No. 1 and No. 2. Available in one gallon bottles or carboys. Also—WATER-WHITE LACQUERS! WATER-WHITE SEALERS! HAMONIZING FILLERS!

SAVE MONEY! You can save considerable money, besides insuring your source of supply, by ordering assorted Lacquers, Sealers, Thinners, Stains, Fillers, Synthetics, etc., in pool-car or truck-load lots. Write DOLAN for particulars!

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You Wood Workers who use abrasive belts . . . you went for our Sharp-Cutting Abrasives like a duck takes to water.

You bought them like hot-cakes . . . so fast that you made us get another plant . . . *just to fabricate more of these Clean-Cutting Abrasives.*

Why this demand? Because so many of you found out Michigan's Sharp, Clean-Cutting Abrasives LAST LONGER.

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IN EVERY TYPE YOU WANT!

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Michigan
SHARP CUTTING
ABRASIVES
'The Humidity Controlled Abrasive'

flaws and cracks in axles, it is reasonable to assume that it could be used to quickly guard the quality of many metal products.

* * *

Pressure Tape. There is now available wide cloth-back, pressure-sensitive tape which may be applied to rattan reed as well as plastic rattan to produce more body and to promote longer wear. It may be applied mechanically between rubber squeeze rolls.

This wide tape could be used for reinforcing any woven or flimsy material during operations or assembly, then removed if desirable. The tape facilitates handling, promotes accuracy in cutting to shape or size, and preserves the desired shape until the work is assembled. Upon removal it leaves no marks or stains.

* * *

Control Devices of various kinds are coming into more extensive use. There is a growing tendency in industries and in homes to transfer to automatic operation many operations formerly done manually. Several manufacturing processes formerly done manually now are being switched to automatic supervision to make possible greater uniformity of product and to, in part, offset high production costs. Many of the new industrial instruments are electronic.

* * *

More Red Cedar. More than 13,000,000 cedar trees will be planted in eight states extending between Virginia and Arkansas before the spring of 1950. This is the culmination of the first six months of activity of the Joint Foresty Program of the Cedar Lumber Industry and the National Cedar Chest Association.

The project got under way July 1, 1948. Its purpose is to increase the

(Continued on page 102)

Throughout Industry—It's Fostoria Evenray HIGHEST EFFICIENCY IN INFRA-RED EQUIPMENT

Properly engineered, Infra-red is the most efficient of all heating systems for finish baking and many other heating operations. Fostoria Evenray Systems out-perform any other Infra-red equipment on the market today. The experience of over 6,000 installations — the outstanding ability and leadership of Fostoria Infra-red engineers — the foremost research and knowledge of Infra-red applications — are combined in Fostoria Evenray Systems. It pays to use Infra-red — and Infra-red pays *best* with the sound engineering of a Fostoria Evenray System. Request a Fostoria recommendation, today.

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THE VEHICLE

Single Most Important Factor in Finishes

By M. A. Glaser
Midland Industrial Finishes Co.

MOST OF THE noteworthy advances in paint technology, which have come about during the last 25 years, have been due to the many new vehicles or binders which have become available to paint and allied industries.

Not too many years ago, the paint maker had available a very limited number of vehicles for his various formulas and products. For oils, linseed and tung were employed almost exclusively. For resins, natural gums such as the various copals (Congo, Kauri, Batu, Pontianic, etc.) and rosin were widely used. Certain modifications of rosin, such as calcium and zinc resinates proved quite helpful in some formulations.

It is noteworthy that Watin's book on Varnish making was reprinted from 1736 to 1900 with only minor changes.

Ester Gum Appears; Maleic Resins

The introduction of ester gum was perhaps the first important contribution of the synthetic resin chemist. Ester gum, a product of the reaction of rosin and glycerin, made possible the development of uniform vehicles having properties far better than those previously possible with a rosin base product. Ester gum varnishes are low-priced, neutral, water resistant (with tung oil) and fast-drying (as compared with natural resin varnishes).

Still another notable improvement came when chemists theorized that the addition of a material called maleic anhydride to ester gum would yield a still harder, more water resistant, more weather resistant vehicle. Their theories proved practical and the so-called "maleic resins" were introduced, and have found great favor in the industry.

Looking back on these developments of early resin chemistry, they seem quite simple and logical. Nevertheless, many years were consumated in preparing and evaluating these products, and in designing new equipment suitable for their economical, large scale production.

Oil-Soluble Phenolic Resins

The introduction of oil-soluble phenolic resins which could be prepared uniformly as well as economically, gave the manufacturer of vehicles another valuable tool for

the improvement of his products. In the matter of weather and water resistance particularly, phenolic resin vehicles set high standards.

At this stage of development, the paint manufacturer had a much larger selection of binders from which to make increasing varied products, as demanded by the tempo of expanding American industry. Much more could be done now in the way of modifying finishes to obtain results for an economy geared to rapid mass production at low costs. However, as is frequently the case, the demands for better finishes became increasingly insistant, and it was soon evident that available materials did not suffice to do the job required.

Alkyd Resins Helped Solve Many Problems

It was the advent of the now well known alkyd resins which really gave the paint consumer the first key to the solution of many of his finishing problems. Alkyd resins are made, basically, by the interaction of such alcohols as Ethylene Glycol, Glycerine and Pentaerythritol, with such acids as Phthalic, Maleic and Sebacic; and modifying with vegetable oils and other materials as required to give the desired properties. Alkyd resins could be prepared which would dry hard, have good color and outstanding color retention, possess hitherto unequaled adhesion to many metals, and be used (if necessary) as a modifying agent for the early materials to improve their quality. The combination of these alkyd resins with nitrocellulose made it possible to widen the base of usefulness of lacquers, and has contributed appreciably to the progress of lacquer technology.

Urea and Melamine Formadehydes

In recent years, the finishing material manufacturer has had available a vast number of even newer vehicles which he could adapt to his problems. The American chemical industry, coming out of its dawdling stage, was producing a multitude of new chemicals which the alert vehicle chemists could use to their advantage.

In quick succession, were made available, resins from urea-formaldehyde and melamine-formaldehyde. These resins, acting as modifiers for the earlier alkyd resins, eliminated one of the objections to straight alkyd materials by producing a hard, mar-proof surface which could not be easily scratched or bruised, even when handled warm out of the baking oven.

Chlorinated Rubber Resins Show Up

Chlorinated rubber resins made their appearance, and enabled us to produce fast air-drying and baking finishes possessing an outstanding weathering, salt-spray, soap, water and oil resistance. Many hydrocarbon resins, made from petroleum and other sources, came into the picture and were useful for making of aluminum finishes and certain resistant vehicles.

Vinyl polymer resins were introduced for special purposes and found ready acceptance for applications requiring resistance to acids, alkalis and abrasion. *(To 24)*

In the meanwhile, new styles had been set in the use of vegetable oils. Instead of only linseed and tung, the vehicle chemist now worked with a multitude of oils, such as soya, cotton seed, castor, coconut, perilla, oiticica, etc. These oils in turn, were chemically modified to yield manufactured oils having better drying properties, better water resistance, and better processing properties.

Variety of Oils Now Available

With the variety of oils and resins now available, it is possible to formulate finishing materials to meet most of the requirements of today. And despite the important roles played by pigments, solvents and driers, it is apparent that in a coating, the vehicle is the single most important factor. The vehicle will, in a large degree, influence the gloss, application properties (sprayability, brushability, or dipability); flow, water resistance, acid resistance, alkali resistance, flexibility, adhesion, color retention, stability (in cans and in diptanks), durability and cost.

Taking into consideration the developments of the past and the new chemical raw materials on the horizon of things to come in the future, it is possible to predict that certain resins will find increasing usefulness in future years. These are:

Styrene-containing vehicles. From styrene, now available in large quantities at a low price, may be made modified oils and resins possessing especially fast-drying properties, good alkali resistance and moderately low costs.

Epichlorhydrin - Bis-phenol vehicles. Also known as the "epon" group, these newcomers produce varnishes with outstanding alkali resistance and brasion resistance.

Alkyd vehicles. The introduction of new alcohols, fatty acids, dibasic acids and modifiers such as styrene will inevitably continue to make these vehicles the most widely used in the protective coatings field for some years to come. Alcohols such as polypentaerythritol, allyl alcohol and polyallyl alcohol, carefully fractionated fatty acids, difunctional acids like crotonic, terephthalic and methylene disalicylic—and others—will offer the imaginative alkyd resin chemist many possibilities for exploration and progress.

Tall oil vehicles. From tall oil, once discarded as a waste product, are being made increasing amounts of low-cost varnishes and resins to fill a definite need in the general purpose vehicle category.

Polyesters containing unsaturated groups. From this class of interesting resins we may expect some day to see that much discussd product — the 100% solids enamel. Polyesters require special catalysts containing peroxide oxygen to attain their best drying properties.

Vinyl base vehicles. The introduction of, 1) copolymers compatable with nitrocellulose, 2) copolymers compatible with alkyds, and 3) organosols, promises to considerably extend the usefulness and usage of these materials. Organosol techniques, involving dispersions of 60% N.V.M. or higher in low cost thinners, make possible

moderate costs per unit area of surface coated since the necessity for large quantities of expensive solvents is no longer present.

Silicone vehicles. Silicone resins may be considered to be a cross between ordinary organic vehicles and silica (quartz). Because of their unusual chemical composition and origin, silicones produce finishes which have been impossible before. In the fields of heat-resistant finishes and extremely durable finishes, silicone-base materials are supreme. Although costs of these materials are currently high, and the number of types of finishes is limited, new devolopments should reduce costs and increase variety.

What new frontiers will modern vehicle-research cross in the future? All that can be said is that anything is possible. Constant researches and evaluations are taking place which each day bring closer better vehicles and better finishes. As important as is the research, of equal importance is the work of thoroughly evaluating the new vehicles, and finding a proper place for the commercial application of the good ones.

In this regard, it is interesting to note that an alkyd resin, made from a rather rare chemical, proved to have most interesting compatability properties on all routine screening tests. These screening

Desirable Property	Resin to Use*
Acid resistance	Chlorinated rubber, vinyl, hydrocarbon, phenolic, acrylic.
Alkali resistance	Hydrocarbon, vinyl, acrylic, phenolic, chlorinated rubber, epon, ethyl cellulose, styrenes, melamine-formaldehyde.
Color retention	Silicone, acrylic, alkyd, maleic, amine-formaldehyde.
Fast air dry	Nitrocellulose, chlorinated rubber, styrene-modified alkyds, alkyds, ethyl cellulose.
Fast baking	Amine-formaldehyde, styrene-modified alkyds, chlorinated rubbed, thermosetting phenolics.
Flexibility	Alkyd, vinyl, ethyl, cellulose.
Hardness Absence-of-tack when warm Mar-proofness	Amine-formaldehyde, thermosetting phenolics.
Heat resistance	Silicone, acrylic, lauric acid alkyd.
Low cost	Tall oil vehicles, styrene-modified vehicles, ester gum, hydrocarbons.
Outdoor durability	Silicone, 100% Phenolic, methylene disalicylic acid alkyd, alkyd.
Salt spray resistance	Vinyl, epon, chlorinated rubber, phenolic, acrylic.
Water resistance	Vinyl, epon, chlorinated rubber, acrylic, phenolic, silicone, hydrocarbon.

*Key resin is shown. Should be combined with others if and when necessary.

tests revealed that this experimental material was compatible with alkyds (both short-oil and long-oil), urea-formaldehyde and melamine-formaldehyde resins, chlorinated rubber, nitrocellulose, and vinyl co-polymers.

The thought immediately occurred that this new vehicle would be useful as a shading paste medium for plants manufacturing a wide variety of industrial finishes were shading pastes in many vehicles are normally stocked. Thorough testing proved the utility of the experimental resin for this application, and the new vehicle (now production-tested) has been in time-saving, money-saving use for over a year.

It may be interesting to list partially some desirable properties in paint films and the vehicles by which these properties may best be obtained.

Unfamiliar Solvents May Cause Trouble

WHEN A solvent that is new to a plant or shop is introduced, any hazards involved should be fully understood by everyone concerned. Otherwise an accident may result, since improper handling or inadequate precautions may lead to illness or fire or both.

In a plant, some time ago, employees were given a new paint for use on machinery but were unaware that the solvent in the paint was highly flammable, although the label warned that the material should be kept away from flames. The men used the paint while a welding operation was going on nearby. A very serious explosion followed.

If the label on an unfamiliar solvent carries warning statements which are not fully understood, detailed information on properties and necessary precautions to be observed should be obtained from the manufacturer before the product is put to use.—SAFETY RESEARCH INSTITUTE.

Valdura Painting Guide

Slide rule tactics are employed by American-Marietta Co., Chicago paint manufacturer, to simplify the plant maintenance man's task of selecting paints for industrial uses. The new gadget, called the Vadura Painting Guide, is operated like a slide rule to gain at-a-glance paint information.

The maintenance man sets the slide at "Surface to be painted" and, automatically, small windows show the preparation required for the surface, the primer recommended, the correct finish coats, colors, characteristics of the finish, and the proper thinner!

Measuring 4x9-in., the paint guide carries a wealth of information for its abbreviated size. With it the plant superintendent has in handy condensed form complete notes to solve nearly any industrial painting problem.

Typical uses noted by the painting guide for specific Valdura finishes include acid rooms, street and aisle markings, buried pipe lines, galvanized metal, stacks, structural steel, swimming pools, water tanks, and many others.

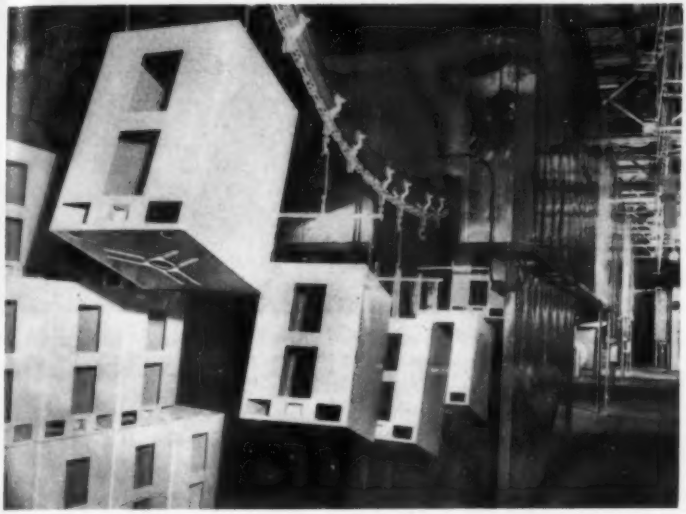
Such factors as exceptionally hazardous jobs, extreme temperatures, and unusual atmospheric conditions, are provided for by the painting guide. A detailed instruction sheet is included so there will be no possibility of misinterpreting the painting guide, even at first try.

School of Spray Painting Classes Announced

Maintained as a service to users of DeVilbiss equipment, several extensive one-week courses for industrial finishers are again included in the DeVilbiss School of Spray Painting curriculum. These tuition-free courses on the function, care and operation of spray painting equipment combine classroom instruction and demonstration with actual use of the equipment.

Identical courses, lasting one week each, will begin on February 21, March 7, May 2, and June 20. Since class size is necessarily limited, it is advisable to write for reservations as early as possible to The DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio.

"THE FINISHING TOUCH"



For Faster and Better Finishing—

SPRA-CON Finishing Systems, engineered and manufactured to give more efficient operation and higher quality production, will help you. Many successful installations are already in operation, like the one pictured. *It will pay you to consult with us on your finishing requirements.*

the SPRA-CON COMPANY

"THE FINISHING TOUCH"

Engineers and manufacturers of conveyors, ovens, washers, and equipment for complete paint finishing systems . . . .

1402 No. Western Avenue, Chicago 22, Illinois

View of automatic spraying and drying setup, as served by conveyor at table height. Workmen are standing at loading and unloading stations; across from them is the oven. The automatic spray setup, controlled by an electric eye, appears in right foreground.

Automatic Spraying

FEATURES PAINTING SETUP FOR BUTT HINGES

By W. G. Brown

Finishing expert at Stanley Works reveals how the surfaces of butt hinges are treated in preparation for painting, and explains automatic spray painting, wherein two spray guns are controlled by an electric eye.

A PROTECTIVE prime coat is all that is required on butt hinges for the builders' hardware trade. After the door in a building is fitted and hung, its hinges will receive finish coats along with the door and trim. The prime coat must have good adhesion and a lusterless surface to receive the finish coats after installation.

Lasting adhesion of paint, varnish or lacquer to metal calls for a

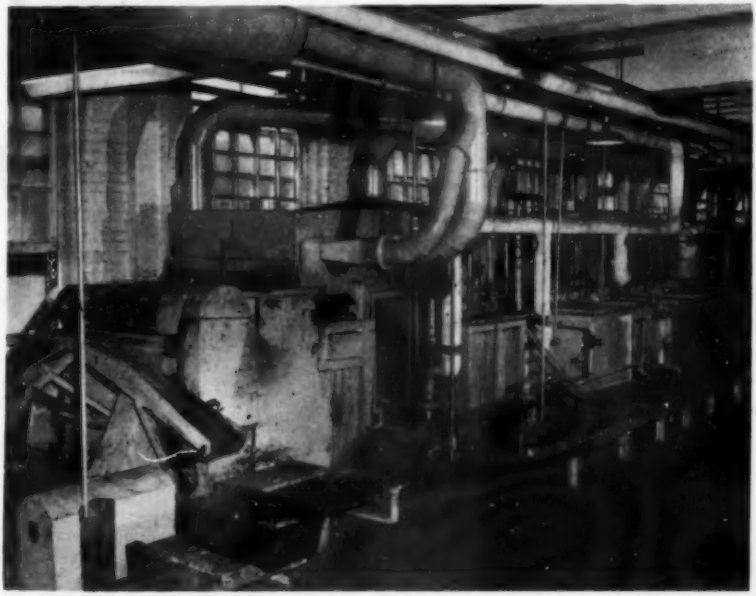
properly prepared surface, one that will not rust if the prime coat is marred when the door is hung or before the finish coats are applied.

Surface Preparation Before Painting

To insure rust resistance, Stanley butt hinges are rustproofed. To insure good adhesion, the metal surface is slightly etched. To insure a coating suitable for various finishes, a lusterless primer is used.

After fabrication, the butt hinges are run through a 5-stage cleaning and surfacing-treating machine in which their surfaces are cleaned and rust-proofed. They are placed on an open-mesh conveyor belt, with their face sides (the side on which holes are countersunk) facing down so that the pressure sprays can never fully close them while they are being cleaned and rustproofed.

In the first stage, a sodium orthosilicate cleaner (strength ⅛-oz. per gallon of water) is sprayed at 180° F. Next follows a hot water rinse at 190° F. The third stage is rust-proofing, the solution being sprayed at 150° F. Then comes a hot water rinse at 150° F. and, in the last stage, a mild chromic acid sprayed at 180° F. The hinges then



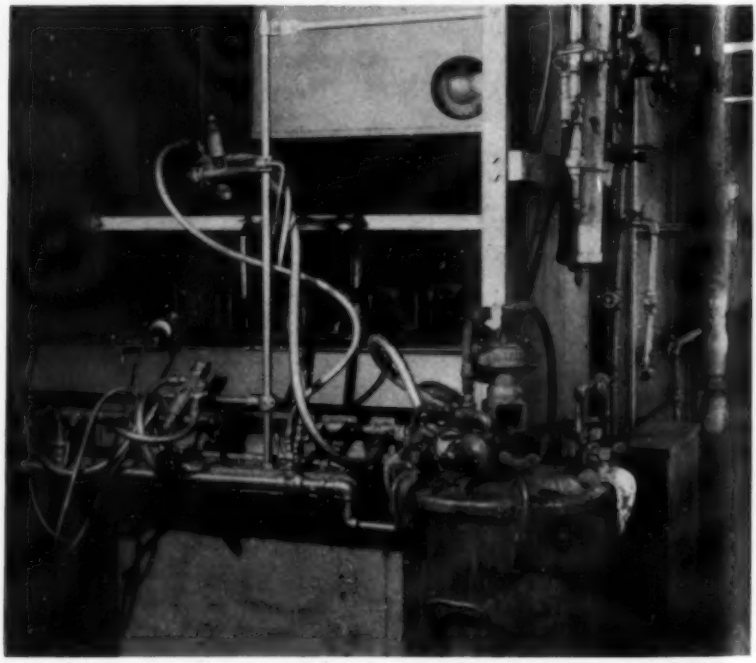
In this 5-stage conveyorized machine the cleaning, rinsing, rustproofing, chromic acid treatment and drying of butt hinges is performed, in preparation for spray painting. Exit end is at left where two metal chutes direct the treated products into tote boxes.

pass through a force-draft drying unit where they are dried at 150° F. Total time in the surface-treating machine and dry-off oven is seven minutes.

Speed of the conveyor belt is nearly 6½-ft. per minute. A feature of the cleaning, rust-proofing setup is the two chutes at the exit end, as shown in one of the accompanying pictures. These chutes—one to the left from center and the other to the right—permit two different products to be run through the machine and to be automatically separated at the exit end, provided they were placed respectively on the right and left sides of the conveyor belt at the loading end. As hinges leave the surface-treating machine they automatically slide down the two metal chutes into tote boxes.

Electric Eye a Feature of Spraying Unit

Boxes of hinges are delivered to the loading station of the spray conveyor where two operators place them on the traveling upright



Closeup of spray booth, showing position of automatic spray guns which coat two sides of hinges, and the electric eye, located on floor of booth just to left of center.

Good NEWS about Burnishing

From North, East, West and South comes NEWS that hundreds of metal processors have found Oakite Composition No. 3 to be ideal for burnishing steel, brass, aluminum, zinc die castings and silver.

Oakite Composition No. 3 gives rich suds in hard or soft water, lubricates smoothly to prevent metal-on-metal scratching, rinses freely leaving no soapy film on work or balls, improves luster quickly at low cost per unit.

FREE Write to Oakite Products, Inc., 32F Thames St., New York 6, N. Y., for Special Report 6705 giving complete details on Oakite Composition No. 3. Full information about cleaning and bright-dipping before burnishing and best methods of keeping balls and barrels in good condition. Also, without obligation, ask about Oakite methods for:

Precleaning in tanks . . . in machines . . .
Alkaline cleaning in tanks . . . in machines . . .
Electrocleaning . . . Pickling . . . Rust Prevention . . .
Pre-paint treatment in tanks . . . in machines . . .
Steam-gun cleaning . . . Paint stripping . . .

MATERIALS
METHODS
SERVICE

OAKITE

Specialized Industrial Cleaning

spindles of an automatic spraying and force-drying unit. Each hinge must be placed on the spindle with its face side (the side with countersunk holes) up.

The chain conveyor on the spraying-drying unit is 67-ft. long, with upright spindles on 5-in. centers. Speed of the chain is 25½-ft. per minute. At this fast speed, you can readily see that occasionally an operator will miss filling a spindle. However, no primer material is wasted because of these misses. Operation of the two spray guns (one above and one below) is automatically and instantaneously controlled by an electric eye. As long as all spindles are filled with butt hinges the spray guns operate continuously (the electric eye's beam remains interrupted) but if or when a blank spindle comes through the booth, the electric eye causes both spray guns to automatically close and remain closed until the beam is again broken by a hinge-filled spindle.

Spray gun action, controlled by the electric eye, is instantaneous. In fact every second spindle could be used and no material would be sprayed on the blank spindles, yet every hinge would be properly coated. Within the spray booth the spindles revolve at a speed of 250-rpm., so you see this is indeed a high speed operation. After leaving the spray booth, the prime-coated hinges are carried through a force drying oven wherein the heat is maintained at 250° F.

The lacquer-base lusterless primer is sprayed at a viscosity of 25 seconds at 80° F., as measured by a No. 2 Zahn cup. The atomizing pressure is 60-lbs. and the fluid pressure 10-lbs. Production of this unit will average 3000 butt hinges per hour.

JUST A LARK. A big stork used to hang around Birdland. He was a great kidder and everybody liked him. Suddenly he disappeared; no one knew why.

One day when barnstorming in another neck of the woods, I met an old magpie who knew everything and was quick on the chirp with gossip. "Remember that stork who used to hang around Birdland?" I asked. "Sure thing", said Mag, "he's in jail down here".

I could hardly believe it. That good-natured stork a jailbird! So I flew down to the jail to find out for myself. He was in jail all right. The sheriff told me the story.

It seems that the stork got a job in a hatchery and one day a lark brought in some eggs to put in the incubator. "When they hatch out, send them to 945 Cedar Grove", he told the hatcheryman.

When the eggs were hatched, the hatcheryman got the address twisted and told the stork to deliver the birds to 459 Cedar Grove, which happened to be the address of an old hen who never had a boy friend.

Neighbors began twittering when they saw the stork knock at the old hen's door with a nesting of larks. Scandal had come to town and they made the most of it. The hen got mad when gossips began to dust her feathers in the dirt. She got hold of the sheriff and had the stork jailed for malicious mischief, libel, defamation of character, and malfeasance in office.

The stork is blamed for a lot of things that ought to be blamed on a lark.

—OLLIE THE OWL.

Magic of Finishing in Display Advertising

PROBABLY no industry uses as wide a variety of finishing materials as display advertising. Every conceivable method of application is used to get the desired effect. It is the work of an artist to take common materials and, with the aid of stains, enamel, lacquer, powdered glass and flock, produce a land of make believe.

The idea back of the display and design is all-important. But if it were not for the wide range of available finishing materials it would be impossible to produce the attractive settings one sees in modern store windows.

One of the old standbys of display advertising is to use the seasonal motif—summer, fall, winter and spring. For instance for spring and summer, pastel shades in blue and green predominate on the back drops in window displays, with perhaps a wall section of the summer cottage in either green or brown stained, sandblasted shingles, or a rail fence finished to represent old weathered rails. Highly colored, grotesque birds perch on gray brown branches of a tree that has shiny green leaves, all made of paper mache, and appropriately finished.

As the seasons advance, red, gold and brown are used profusely in fall displays. Common wood shavings from any planing mill are dipped in a red brown stain, with a little light orange yellow added, to produce an excellent floor mat of broken autumn leaves.

Bare gray brown tree branches of paper mache with side props of silver-coated paper leaves on which a small amount of bright, translucent red is sprayed makes one almost feel the frost in the crisp fall air. Even the paper mache branches must be finished in a gray brown flat paint, with a darker brown shading on branches and twigs.

In the winter scenes, these same bare branches are painted with a flat white; then an adhesive is sprayed and, while it is still wet, powdered or silvered glass is sifted on and piled up in the crotches to simulate snow.

There is no limit to ideas for displays to attract the prospective buyers' attention. A man's den with fireplace and dog, hunting and fishing trophies, lamplight, a book and a pipe, are arranged to sell men's robes and slippers. The gala day motif offers a wide field in settings for Halloween, Thanksgiving, Christmas, Easter and Independence Day.

Screen printed murals are sometimes used as a back drop. The line drawings are not too massive—more on the delicate side—and show old fashioned ladies and gentlemen of the gay 90's in wing collars and top hats. Printed in sepia on an off-white background, the color scheme may be changed through the use of colored spotlights. These murals are generally used to set off the modern old-fashioned look in women's clothes.

Another type of screen-printed back drop is a blue sky blending into light gray at the horizon with fleecy white clouds and three wild ducks done in natural colors and flying in formation.

Last but not least, the use of flock is becoming more widespread. A deep boxed picture frame, the interior of which is coated with black flock is used to display a single pair of gold slippers; a yellow spot light attracts the eyes to the slippers.

For displaying Venetian glass pieces, a large, deep frame unit with pedestal feet finished to represent Italian marble is used. The interior of the frame is coated with maroon flock applied over an enamel adhesive of similar color. *(Con. on page 38)*

Incidental pieces used for decorative purposes may include a brown flocked coffee table with a thin line gold design border. This produces the effect of a suede top with gold border. The border design is applied after the brown flocked top is thoroughly dry. The gold color adhesive is screen printed on the flocked surface in the desired pattern, and while wet the gold flock is applied by beater bars.

The designing and producing of advertising displays offers a paradise for the ingenuous finisher. In this profession finishing is the magic wand.—P.C.B.

Removes Rinse Water Quickly for Primer

By John Raine

THERE IS NO greater proving ground for the ingenuity of the finisher than a custom finishing shop. All types of products, all shapes and practically every kind of material must be cleaned and finished according to the customer's specifications.

To clean and properly prepare various surfaces for finish coats, we have a spray-Bonderite 6-stage washer, trichlorethylene vapor degreaser and Alodine tanks. Some products are plated before finishing.

Ordinarily a blow-off station is located just back of the metal washer where excess moisture is blown off the parts before they enter a dry-off oven. The temperature maintained in this oven will depend, to some extent, upon the shape of the parts—that is according to how many crevices, bends and close places they have where water will be pocketed and held. Finally, the oven-dried parts must be cooled before they can be prime coated.

We have eliminated the blow-off station, dry-off oven and subsequent cooling. The last stage in the metal washer is a hot water rinse. Located where the dry-off oven ordinarily would be, we have a zinc-lined dip tank over which the overhead monorail conveyor dips in a shallow U-shape. *Parts leaving the washer are immersed in a water-removing solution in this tank. Travel time between this tank and the prime-coat booth is only 1½-minutes.* This water-removing solution contains 4½% to 5% solids. Aided by hot air jets, the treated parts will air dry in 1½ minutes to the extent that they can be safely primed.

The objectionable water that is drawn from metal parts immersed in this water-removing solution, settles to the bottom of the tank and is siphoned off at intervals, depending upon the volume of production. No residual matter clings to the dipped surfaces. The coating prevents any finger printing as well as oxidation. Regardless of temperature and weather conditions, the treated parts that are left unfinished, over a week end or holiday period, will not rust.

A similar tank is located in the plating room. Chrome plated ornaments and name plates which have certain areas that must receive designs or lettering in color (applied by spraying through masks) are dipped into this treating solution before the color is put on. It helps adhesion of the synthetic enamel (color) to the chrome plated surfaces. The synthetic coatings are then baked in a batch-type oven.

Aluminum parts which are Alodined and then given a hot water rinse, are dipped in the water-removing solution before application of finish coats. This treatment has no effect on baking periods and temperatures. And, of course, for use in a custom finishing shop, the treating solution must be compatible with synthetic primers, enamels, lacquers.

TAKE A TIP and get better acquainted with *Vedoc* finishes, an outstanding line of *organic* industrial coatings. All *Vedoc* finishes are developed for a specific use, then slightly varied to best fit each customer's production setup. Let us tell you more about them!

LIQUID PLASTICS DIVISION

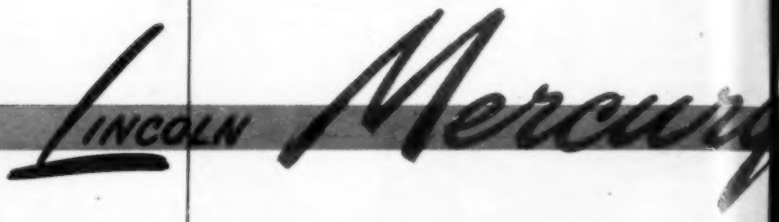
FERRO ENAMEL CORPORATION

4150 East 56th Street

CLEVELAND 5, OHIO

BY FRED M. BURT

How bodies, fenders, hoods and various small parts for new automobiles are cleaned, treated to prevent rust, and then given a lustrous baked enamel finish.



How auto bodies, fenders, hoods and various small parts are cleaned, treated to prevent rust, and then given a lustrous baked enamel finish. Also notes on cleaning and maintenance of all of the spray equipment.

By Fred M. Burt

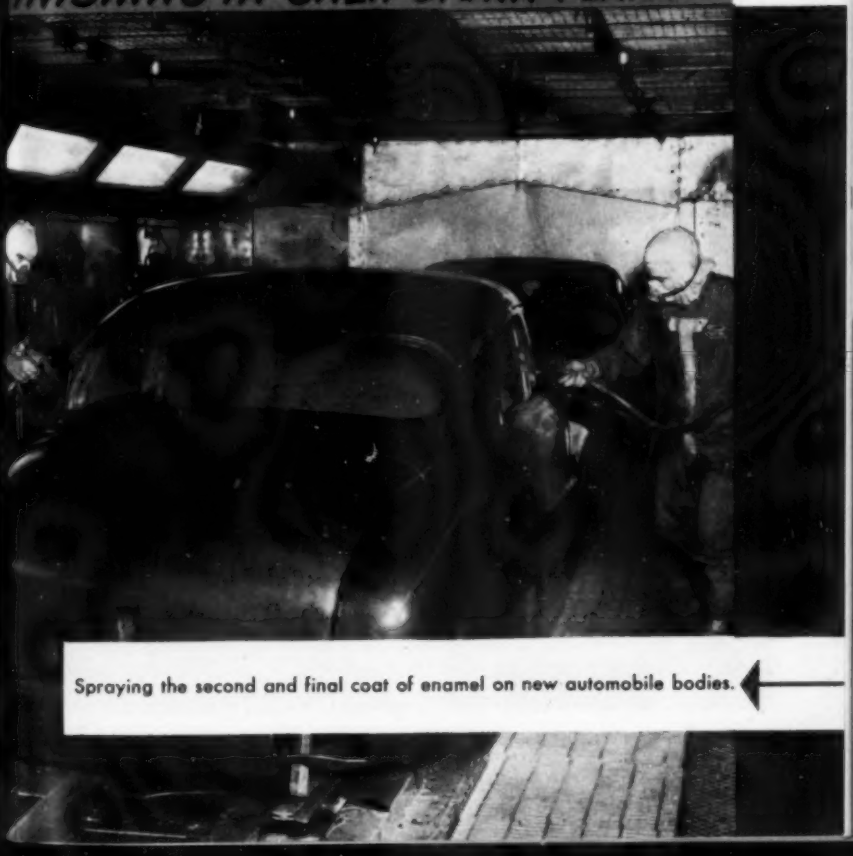
THE SURFACE preparation and spray-painting of automobiles has grown to be a huge business in California, particularly in Los Angeles County which ranks second to Detroit as an automobile assembly center. Probably this is as it should be, for California leads all of the states in automobile registrations, with nearly 3,000,000 passenger cars, more than 300,000 trucks and about the same number of trailers.

In the Los Angeles area the following makes of automobiles are now assembled: Buick, Chevrolet, Dodge, Ford, Frazer, Kaiser, Lincoln, Mercury, Nash, Oldsmobile, Plymouth, Pontiac, Studebaker and Willys. With all of these facilities in operation, new cars will be assembled at the rate of more than 650,000 annually.

Ford Motor Co. alone spends in California, aside from wages, some $35,000,000 per year—a good start on its program to purchase from California manufacturers, $60,000,000 worth of parts for its California plants—a program which is matched by General Motors. Before the war 11% of the parts used in California car assembly were made locally. Present production facilities for automobile parts man-

Buffing the finished surface of a new Lincoln to mirror-like smoothness.

FINISHING IN CALIFORNIA PLANT



Spraying the second and final coat of enamel on new automobile bodies.

ufacture can increase that production volume to fully 75%. In metal finishing alone, this adds up to a huge volume of supplies used on the many fully mechanized finishing lines.

The latest of California's automobile plants is the new Lincoln Mercury plant in Los Angeles. On a 34-acre site, with 312,000-sq. ft. of car production area, five miles of overhead monorail and floor type conveyors, the daily production capacity is 200 automobiles.

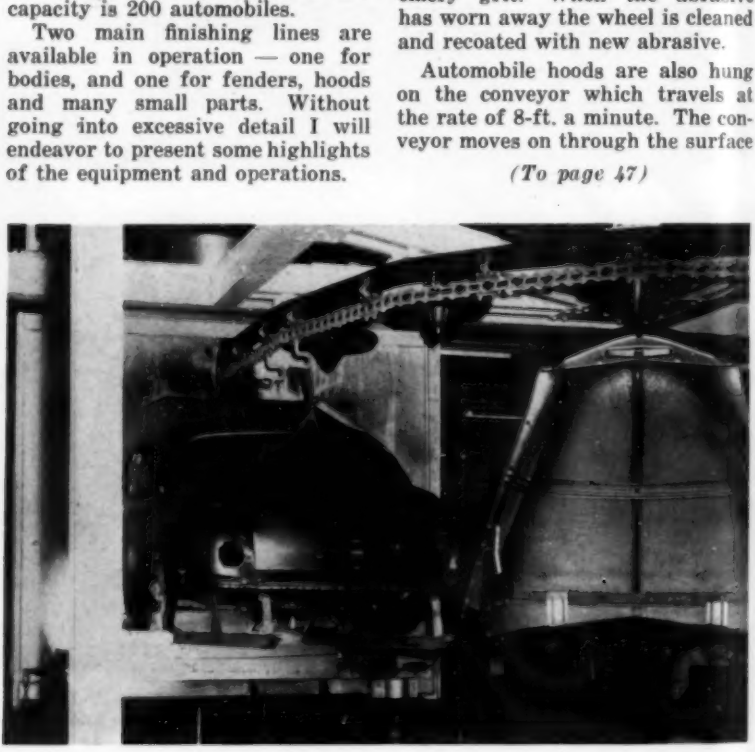
Two main finishing lines are available in operation — one for bodies, and one for fenders, hoods and many small parts. Without going into excessive detail I will endeavor to present some highlights of the equipment and operations.

Spot Grinding; Surface Cleaning and Preparation

Coming off the body construction and metal finish conveyor, automobile bodies are picked up by an overhead chain conveyor and carried past a station where a workman does the final touch-up spot grinding with a cloth abrasive wheel. The abrasive wheel is prepared by being rolled in a liquid glue and then rolled in No. 50 emery grit. When the abrasive has worn away the wheel is cleaned and recoated with new abrasive.

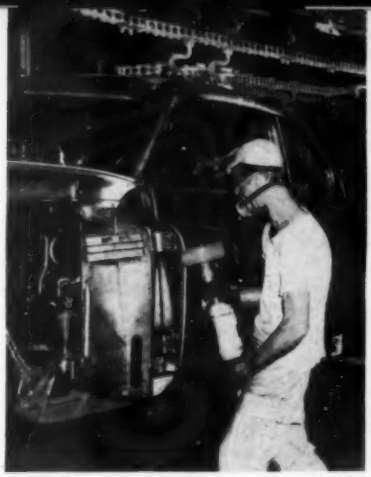
Automobile hoods are also hung on the conveyor which travels at the rate of 8-ft. a minute. The conveyor moves on through the surface

(To page 47)



Entering the cleaning and rust-proofing setup to prepare surfaces for the primer coat.

preparation setup. In each of the five stages of operation, well separated solutions and rinses from temperature-controlled tanks are sprayed from banks of nozzles set at different angles to hit all parts of the hoods and bodies. The solutions and rinses then drain back for recirculation. Surface preparation includes spraying with a hot metal-cleaning solution, hot water rinse, rust-proofing treatment, clear water rinse and a chromic-acid rinse, the latter at 160° F.



Lightly smoothing the edges with small portable grinding wheel. This is done before bodies enter the metal-cleaning and rust-proofing operations.

Dry-off Oven
Pressurized Spray Booths

A little farther along the line the automotive units enter a dry-off oven. This oven, in common with others to be mentioned, is heated by natural gas. The paint baking ovens are operated at between 275° and 300° F., depending on the conveyor speed used. At the end of the dry-off oven the body carriers rest on rollers while their suspending chains are hooked onto another conveyor which carries them along the metal finishing line. Hoods are also transferred. *(To page 48)*

Wet sanding deck for body primer coat; drying oven appears in the background.

Next is the spray booth for under-body coating, where the conveyor moves to a higher level to carry bodies above the sprayer who sprays the undercoating.

For some distance of conveyor travel the treated metal surfaces are closely examined. If any places need it, a special compound is knifed on at any points of imperfection so that all surfaces will be perfectly smooth before the primer coat is put on. This compound adheres perfectly and air-dries quickly.

After a 180° turn the bodies enter a long primer spray booth. This booth, like all others on the body line, has 15-ft. vestibules at each end. Each spray booth is pressurized — with air coming in through filters from above and a lesser volume of air being exhausted through floor grilles and the water-wash units. All air filters are removed about once every 60 days, to have the used cotton packing media replaced with new material.

A portion of the paint mixing or paint preparation room from which pipe lines lead out to and from spray booths. All paint materials are carefully strained before being poured into mixing tanks.

Water in the spray booth tanks is skimmed every night, and deflocculator is added as required to keep the paint particles broken down. The tanks are emptied, cleaned and refilled regularly.

The inside walls and ceilings of all spray booths are cleaned and sprayed regularly with a removable spray booth coating. The booths that are used for prime coating and for the first enamel coat are sprayed inside with a white coating. A more tacky coating composed of pigmented masking oil and clear Filmite is used on the interiors of final enamel spray booths. These spray booth coatings are sprayed on at night with a portable spray unit.

Primer Coat; Baking; Wet Sanding; Drying

Automobile hoods, after being prime coated and oven dried, are removed from the conveyor, given a wet sanding on a water-rub deck, and then carried by a high-elevation conveyor to the finishing line to receive finishing coats, along with front fenders and small parts.

The prime coated bodies, oven dried, are transferred to another conveyor traveling at 7-ft. a minute to be carried through the body prime wet sanding deck, where No. 280 grit wet sandpaper is used.

The conveyors, on their return travel, move through hot-caustic

*Hedrich-Blessing photo courtesy of St. Charles Mfg. Co., St. Charles, Ill.

This gleaming-white, custom-built St. Charles enameled steel kitchen* was packed on a truck and shipped uncrated! The edges of all doors and drawers were protected with Bauer & Black Industrial Adhesive Tape No. 158, a pressure-sensitive cloth tape that ***pulls off clean*** and leaves no stain or discoloration.

Tape No. 158 was specially developed to meet the need, among shippers of enameled goods, for a strong, non-staining binding and protecting tape. It has a tensile strength of 46 lbs. per inch of width; it retains its clean pull-off up to 180° F. Absolutely non-staining, it can be safely used on a wide variety of white and pastel finishes (alkyd, urea and nitrocellulose lacquers).

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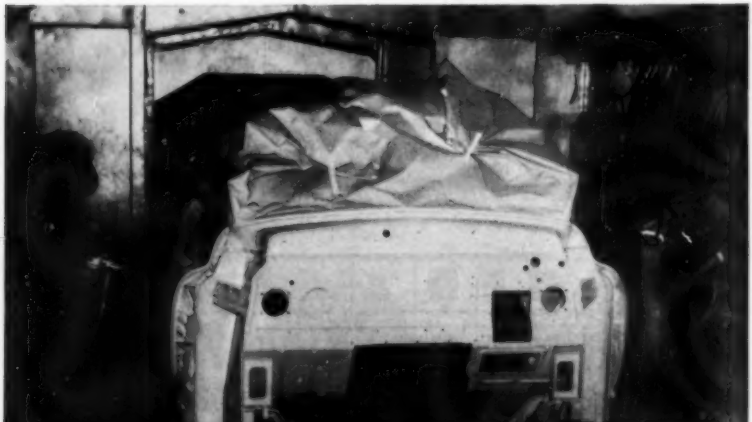
washes which are designed and operated to remove all paint particles from the chains and carrying fixtures.

Following wet sanding, the bodies move on through a dry-off oven to a station where the primed rear fenders are attached. These fenders have received their prime coat on the fender prime line and have reached this point by overhead conveyor delivery. Bodies move on through the "gas off" (wash with aviation gasoline) and "tack off" (wiping with tack rags) stations; make another turn and pass through the first enamel spray booth and the first enamel oven. Leaving the oven they arrive at the wet sand deck, being cooled by fixed sprays of water. The bodies are wet sanded with No. 360 grit abrasive paper, and conveyed through a dry-off oven for transfer to a floor type, slat conveyor.

The second enamel coat is sprayed in pressurized spray booths and then oven baked. At this point all parts of the finished surface receive a careful final inspection. On a combination of roller conveyors and transfer dollies, approved jobs move on to assembly. Others travel through a production line which includes a repair and 2-tone spray booth and an oven. Beyond this area are the trim and body storage lines, and the painted hood and fender storage area.

The surface preparation and finishing operations for fenders, hoods and small parts are much the same as for bodies. Fenders first travel through a large solvent degreasing machine, even through a metal surface preparation setup, and on to the prime coat booth and oven; transfer to the finish coating conveyor for wet sanding and the spraying and baking the two coats



A masked body in the 2-tone spray booth where the lower part is being spray painted.

Lamp, product of Stadler-Newirth, Inc., coated with an Egyptian finish.

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If the exterior finish of your product is Egyptian, you can be sure it will meet every competitive test . . . for beauty and durability.

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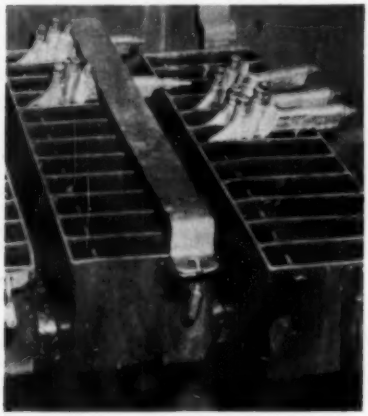
SYNTHETICS • LACQUERS • REDUCERS • THINNERS

of enamel. A second shift in this department only, finishes the instrument panels and does re-work and other special jobs.

All used spray guns, when not in service, are locked in special metal boxes, one gun to each compartment. These boxes contain a 50/50 mixture of naphtha and light lubricating oil. The oil lubricates the gun and the naphtha prevents the paint from setting up.



While spray guns in service are not in actual use they are placed, as shown, in partitioned metal boxes which contain a mixture of naphtha and thin lubricating oil.

A paint mixing room and a recirculating system which includes fourteen 60-gallon tanks and pipe lines supplies primer and enamels to the various spray booths. Standard viscosities, as specified for each enamel, are checked with a No. 4 Ford cup.

When the Lincoln and Mercury automobiles leave the end of the final assembly line, if the slightest imperfection is found anywhere in their smoothly enameled surfaces, the car is routed through a retouch paint spray booth and a steam heated oven (at 160° F. which will not harm the glass) on a drag conveyor. Polishing with a soft sheepskin buffer is the final operation.

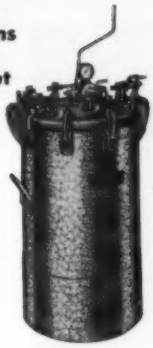
From the beginning to the end of all of these operations the work proceeds with meticulous care, so that all of the high standards set are rigidly maintained to the end that the fine original appearance of each automobile will withstand years of service in any climate. While the effects of a possible slip-up in earlier finishing operations might not always show in final inspection, nevertheless the proud owner of a new car would certainly be disappointed if some time later a failure occurred in the finish.

METAL CLEANING. Improper cleaning of metal surfaces before painting is easily the greatest single cause of early paint failure over metals. Oils, drawing compounds, solder fluxes, rust, mill scale, and sweat marks should all be removed if the paint job is to have a reasonably long life. Vapor degreasing with solvents, cleaning with solvents, cleaning with alkalis, and cleaning with special rust-inhibiting cleaners—all have their merits and their place.—R. H.

SPRAYING IN RECESSES. In spraying materials into small, deep recesses such as pigeonholes in desks and secretaries with an ordinary spray gun, cut down the spray pattern to an even, round spot and use as little air pressure as possible. This will greatly decrease fog and overspray, and make possible smooth and evenly coated inner surfaces.—ROLLIN H. WAMPLER.

60 Gallons Top Outlet

30 Gallons Top Outlet



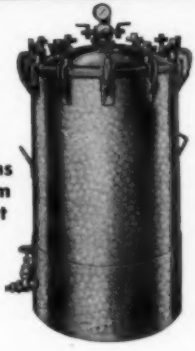
15 Gallons Top Outlet

2 Gallons Top Outlet

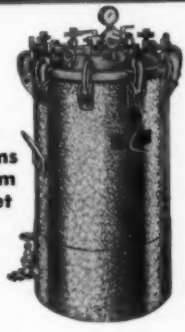
5 Gallons Top Outlet

10 Gallons Top Outlet

60 Gallons Bottom Outlet



30 Gallons Bottom Outlet



15 Gallons Bottom Outlet

2 Gallons Bottom Outlet

5 Gallons Bottom Outlet

10 Gallons Bottom Outlet

EQUIPMENT FO

By P. C. BARDIN
Associate Editor

Most work in a custom shop is sprayed.

CUSTOM FINISHING calls for the application of paints, lacquers and enamels by any one or a combination of five methods, namely, spray, dip, whirl, tumble and hand decoration. The type of product to be coated, its size and shape, and the quality of finish desired are factors to consider when deciding upon which method to use.

The price the customer is willing to pay is an important factor too. Of course the greatest emphasis must be placed on quality of finish required. Some products, by reason of their composition, shape and size lend themselves readily to dipping or tumbling, but perhaps the customer's requirements can only be met by spray painting.

It is possible to do a great deal of finishing in a shop equipped with a single conveyor, spray booths, dip tank and an oven through which the conveyor travels. Experience has shown that separate units of equipment are more versatile as well as more economical. The building should be designed to accommodate various finishing units, so that it is really a collection of separate finishing rooms rather than one big finishing shop.

Each coating unit is built for a specific type of finish application. Some are individually served by a single conveyor and oven—or the same conveyor and oven may be used jointly with other units when similar finishing materials are being applied and the baking periods are equal.

Surface Preparation Before Finishing

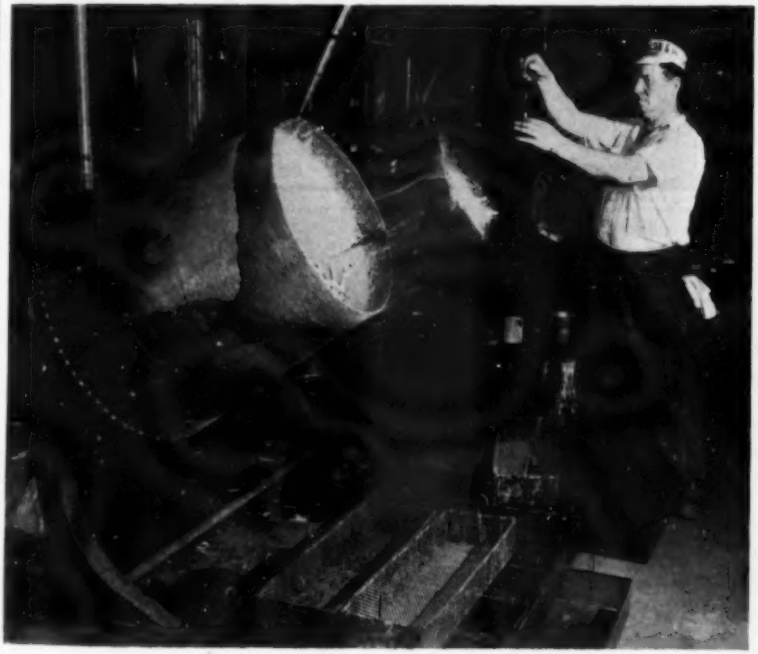
Surface preparation, which includes metal cleaning and rustproofing, must also be planned for a wide variety of requirements. Most of the steel products will go through a washing setup which may include an alkali cleaner solution sprayed at 180° F., one or two hot water rinses at 170° F., rustproofing treatment at 170° F., a hot water rinse, and finally a mild chromic acid rinse.

FOR CUSTOM FINISHING

Just before or immediately after leaving the metal cleaning setup, products are oven dried and at a fairly high heat. This oven drying serves two purposes. First, it removes all traces of moisture in seams or close places in some shaped parts; second, on any zinc-plated pieces, it acts as a hydrogen-relief oven to remove any hydrogen gas that may be trapped in the pores of the metal. If this gas is not removed, it will cause blisters when the enamel is baked.

Small aluminum parts must go through a separate cleaning in wire baskets which pass through a series of tanks. Plastic parts and products are usually cleaned in petroleum spirits. *(To page 58)*

When large quantities of small articles are to be coated they are sometimes tumbled, then the coated work is poured into mesh baskets and placed in an oven to be baked.



Spray Painting and Baking Setup

An excellent setup for spray painting small metal parts is shown in the elevation drawing marked Fig. 1. The crossbar conveyor (two parallel chains with horizontal crossbars spanning them) extends from the upper part of the basement to near the ceiling of the second floor. Its 6-ft. horizontal metal bars support wire mesh baskets. Each basket is divided vertically in the center, and each compartment has slides to accommodate six or seven trays, depending upon the size of the pieces.

Parts to be painted are placed on trays at the loading station and slid into the wire baskets to be carried up and into the pressurized spray room. As they descend inside the room, some trays are removed from the baskets and the parts are spray painted by operators at or near the area marked *A* in Fig. 1. Other loaded baskets are allowed to continue around to the area

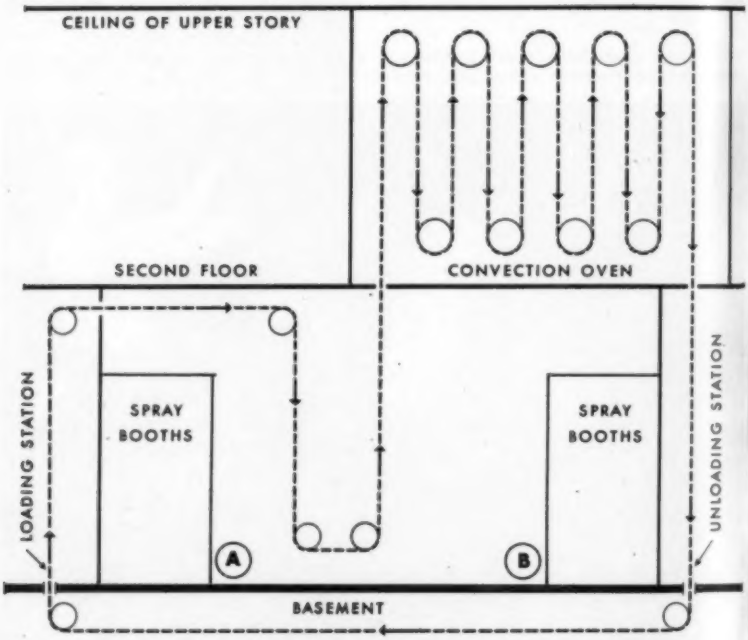


Fig. 1—Cross section elevation of conveyorized spraying and baking setup. The conveyor is a crossbar type; that is, it has horizontal bars spanning two parallel chains which run over sprocket wheels. Work in process is hung to the crossbars with hooks. Some work is removed from the conveyor at station A, sprayed and again hung to the conveyor. Other work is removed at station B, sprayed and hung back on the conveyor.

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marked *B* where they are spray painted by the operators on that side of the room. Painted parts are carried up into the oven on the second floor to be baked, thence down to the unloading station where they are removed and packed for shipment.

Pressurized Spray Booth Assures Cleanliness

Clean filtered air is forced into the spray room, and also into the oven. The spray room, which is enclosed in fireproof glass, is kept under a slight air pressure to insure cleanliness.

Another spray painting unit that is important in a custom shop is a 4-man, water-curtain spray booth to take care of large objects, or for inside and outside priming and double top coats. The entire booth area should be enclosed and kept under a slight air pressure. Like the other unit described, only filtered air should enter the room. The oven used in connection with this unit may be located on the roof of the building to conserve working space and to aid the comfort of employes during the hot summer months.

Other equipment useful in a custom shop may include several one-man spray booths and perhaps an automatic spray unit. All of these booths may be served by an auxiliary overhead chain conveyor which is equipped with switch arrangements so that painted parts may be switched onto the oven line if or when the material and baking periods are the same. This arrangement provides maximum use of oven capacity.

A convenient and flexible spraying layout is shown on page 66. It includes two small down-draft water-curtain spray booths, an overhead chain conveyor with hangers, and an adjustable infra-

Cleanliness and safety should prevail where there are tanks of hot chemicals for cleaning and surface-treating metal products before they are coated with paint or enamel

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See what BEHRLON can do for your product. Simply send us samples for a free BEHRLON demonstration. Our skilled product engineers will apply the proper BEHRLON finish in the colors you choose, and return the samples promptly for your examination. Send for the new BEHRLON color swatch card. Write us today.

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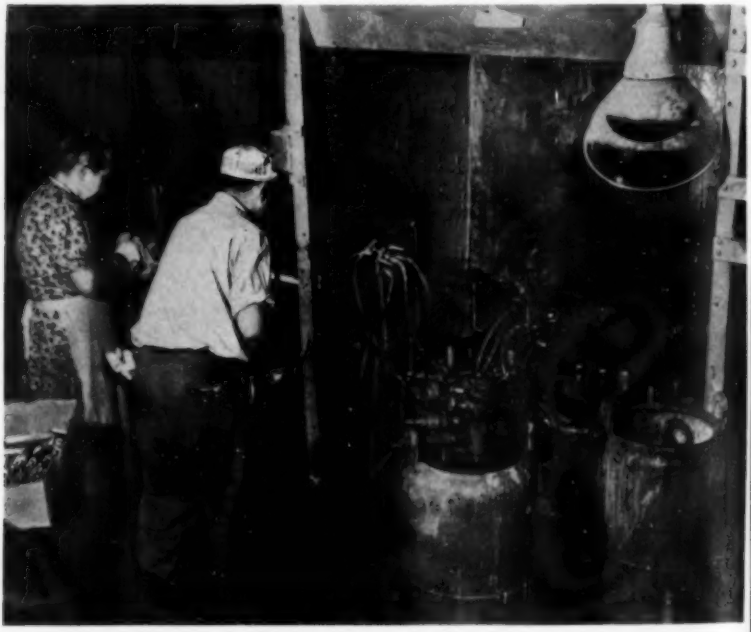
red oven. The unit should be set up in a separate room where it can be operated without interference by other production. It is useful for finishing small metal parts and for taking the overflow work from other equipment.

Automatic Coating Units Of Different Types

Some items ordered in large quantities, are of such size and shape that they can be profitably painted by an automatic spraying unit. The volume of production will determine the number and type of these automatic units that may be required. A typical unit is shown in Fig. 3, at the right, where spray guns are set to automatically spray synthetic enamel on parts as they are mechanically revolved on vertical spindles mounted on a chain conveyor.

Another type of automatic unit that is useful in a custom shop is a horizontal wire-mesh belt conveyor which travels through a down-draft water-curtain spray booth equipped with automatic reciprocating spray guns, followed by an infra-red oven. This type of unit is adapted chiefly to coating

(Continued on page 66)



Setup for spraying small circular parts automatically as they move along by conveyor

Wherever You Turn You'll Find

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On the street, at the office, in the plant, at home, in stores—wherever you turn—hundreds of the products you see wear fine Ferbert-Schorndorfer finishes.

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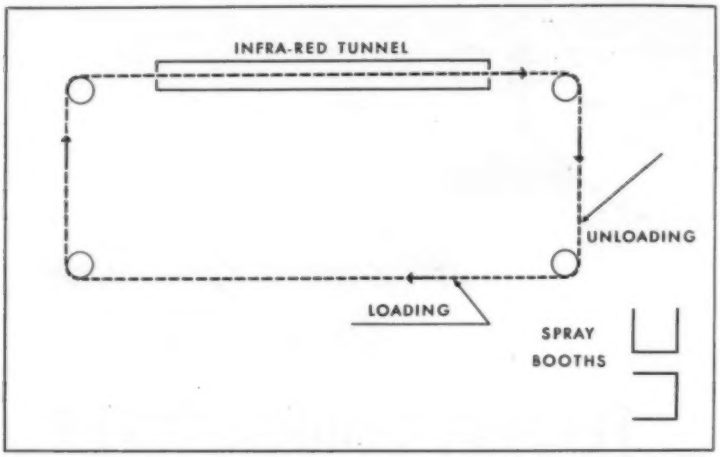


flat metal pieces such as wall tile and metal discs. Two wire-mesh belts will be needed so that one can be cleaned with solvent while the other belt is in service.

Facilities for Extensive Dip-Coating

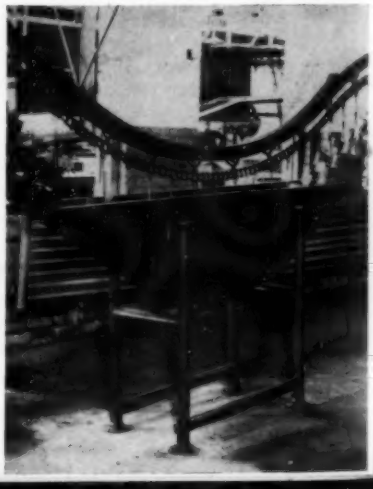
Any one or more of several different types of dip-coating units can be used for painting various parts. One can be a simple manual setup consisting essentially of a tank of paint and an adjoining drainboard. Single large items or racks of small parts are lowered into and lifted from the tank and hung to a stationary or movable support above the drainboard.

Another type of dipping setup includes a tank and drainboard, plus a mechanical device for lowering and lifting racks of parts vertically. An adjustable slow lift of immersed parts vertically from a liquid coating material properly formulated for the job makes possible a smooth coating of reasonably uniform thickness.

On overhead conveyorized setups, a section of the monorail conveyor can be depressed so that as the parts in process are carried along

(Continued on page 71)

Conveyorized dipping in shallow metal tank.



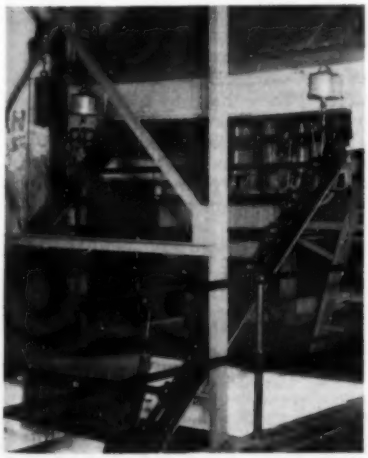
they automatically descend gradually into the tank of paint, are immersed completely, then gradually lifted out, and finally are moved along over a drainboard that slopes toward the tank.

A conveyorized dip-coating setup may or may not include an electrostatic detearing installation which automatically removes those objectionable tear drops of paint that cling to the lowest edges of dipped work.

Almost certainly the layout will include an oven of some kind for quickly drying or baking the film of paint or enamel.

Tumbling and Whirl Finishing

For tumble finishing small parts, several tumbling barrels will be needed. In one of the pictures that illustrate this article small pieces are being coated in blue enamel in one barrel, and green enamel in the other barrel. Each barrel will hold 2000 to 3000 small pieces. About one quart of enamel is required to coat this quantity. The tilted barrels revolve at 30-rpm.



Glimpse of crossbar conveyor entering oven.

Exact tumbling time will depend upon the viscosity of the material, the temperature and humidity of the air at the time of tumbling and the color of the material being applied. When to stop tumbling can only be determined by examining the pieces to see that they are completely coated, and that the finish is just tacky enough to barely stick to the fingers. Then the coated pieces are ready to be placed in metal trays for baking.

Some parts the size and shape of which may prevent satisfactory tumble finishing, can be coated in a dip-whirl machine. The parts are placed in a wire-mesh basket, dipped into the finishing material, then lifted from the coating material and whirled for about three minutes. Sometimes they are whirled first in one direction, and then whirled in the opposite direction. Centrifugal force removes all excess material. The coated items are then placed in wire trays for baking in a batch type oven, or poured out onto a metal-mesh belt conveyor which passes through an infra-red oven. Whirl finishing is a faster operation than tumbling.

Batch Type Ovens Are Desirable

In a custom shop, batch-type ovens are a necessity. These ovens can be used effectively on various small jobs and for baking the coat-

ed work at higher or lower temperatures and for different periods of time.

Too much importance cannot be placed on the design, construction and cleaning of hooks and racks for holding parts to be sprayed or dipped. The speed and efficiency of many coating operations depend largely upon the hooks or racks used for the job. In custom finishing, racks are often designed and built for each job. Considerable ingenuity enters into the designing and building of these racks so that various shaped parts will be held at the correct angle for either spraying or dipping.

Facilities for Hand Decoration

The complete custom shop should have a hand decorating department. For convenient and efficient operation this room could have an elongated U-shaped table with a T-shaped table extending into the center of the U; all tables to be served by a continuous variable-speed conveyor. As ports move along slowly by conveyor, operators seated at the tables, remove them to perform some hand decoration; then replace them on the conveyor.

At the outfeed end of the setup there should be a series of infrared lamps for force drying the hand decorations, so that the parts can be packed for shipment immediately.

Hand decoration may include anything from decals to the application of colors by air brush, stylus or hand brush, depending upon shape of the part, location of the design and other decorative requirements.

Why Enamel Gloss Wasn't Uniform

SOME YEARS AGO I was called to a customer's plant on an unusual and baffling complaint. The customer made custom-build kitchen cabinets of wood and finished them with one coat of white primer-surfacer and one coat of white gloss enamel. The trouble was that on some areas the enamel had a fine uniform high gloss, but on others it was semi-gloss or even dull flat.

Investigation disclosed that the finisher always kept the pigments in the enamel and undercoat in uniform suspension. The coats were adequate and uniform in thickness. In fact, none of the usual causes of such a condition could be found.

Finally, in desperation, some cabinets were finished in the usual manner, except that the coat of primer-surfacer was not sanded at all. To everyone's surprise, the work was perfect except for a few specks and nibs which showed through the enamel. The gloss was high and uniform. At least the cause was found.

The workmen who sanded the primer-surfacer were too conscientious. They had been sanding the undercoat too much, so that it was actually too thin in some spots. Over these thin spots the enamel failed to develop a high gloss. By reducing the sanding to a point where only the specks and nibs were cut off, the trouble vanished entirely. — ROLLIN H. WAMPLER.

Industrial Designer Honored

In a recent bulletin of the Midwestern Technical Institute, Chicago, Hans Peter Nelson was honored for his work in the development of a modern course of Industrial Design for students. He is the director of this department at the institute.

Mr. Nelson has a private practice of Industrial Design and Style Consultation at 1510 Belle Plaine, Park Ridge, Ill.

Novel Greeting Card

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Created and produced by A. S. Butterweich of Velvetone Finishing Corporation, New York—this flock-enriched Christmas Folder is but one example of the numerous ways in which Flock can be decoratively utilized. Next year's holiday card selections will find Flock on top...in sales too! Investigate this thrilling new medium. It pays off—but won't fuzz off! Write today for samples and color charts.

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Special Masking Setups

FOR SPRAY PAINTING LUCITE GADGETS

By M. Bauer

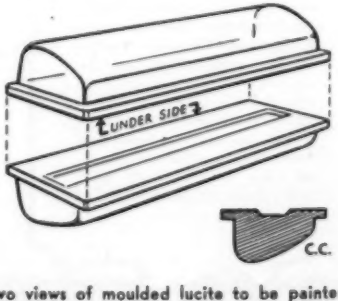
SOMETIMES the smallest part of a product offers the greatest problem in successful finishing. An example of this may be found in the relatively small oven indicator for Hotpoint electric stoves. This item is made of clear lucite, about $\frac{3}{8}$x$\frac{5}{8}$x2-in., shaped as shown in the accompanying drawing. The bottom or underside is not perfectly flat but tapers in slightly toward the middle from both outside edges so these edges will fit tightly against any flat surface on which the indicator is placed. The underside also has a shallow recessed channel about $\frac{1}{8}$-in. wide, with slightly tapered sides and ends. This shallow channel extends to within about 1/16-in. of each end of the indicator. In other words, the channel is enclosed on four sides.

How the Oven Indicator Works

One can better understand the finishing problem when he knows how the indicator works. This small plastic piece fits into the front of an electric stove. When the oven switch is turned OFF, the indicator appears white. When the oven is turned ON, only the channel (as above referred to) *shows red.* The surrounding surfaces of the indicator remain white. Requirements are that *only the channel must receive translucent coatings,* while the areas surrounding the channel must be completely covered with opaque material. Obviously the channel and its tapered walls must be completely masked while the opaque coating is being applied.

Why Some Methods Wouldn't Work

To clearly present the problem of painting the back of this piece, it may be interesting to review the possible methods of doing the work, and the obstacles that rule out the use of certain methods. *A coat of opaque material must be applied*



Two views of moulded lucite to be painted on underside and serve as oven indicator. The sunken channel must be masked for the first spray coat of paint, which is opaque.

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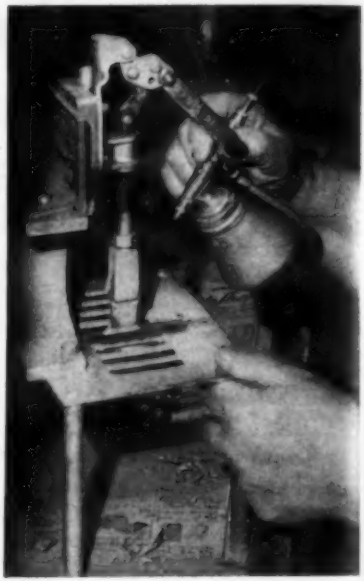
first to the back of the piece, except the channel. The possibility of applying this coating material with a roller can be eliminated because the surface tapers slightly from both edges to the center. If a roller soft enough to coat this tapered surface were used, then some of the opaque material would spread to the tapered walls of the channel.

Insufficient dimensional stability of a mass of lucite this size eliminates protecting the channel by a precision metal mask or shield. Even if all of the indicators were molded from the same set of dies, a variation of as little as 1/64-in. in the channel would be enough to cause overspray to contact the surface of the channel or its walls.

How The Problem Was Solved

From the foregoing it is evident that the mask must be gently but firmly forced into the channel to compensate for any slight variation in size or contour—and, when the mask is seated, the entire channel and its tapered walls will be protected. A special mask designed and made to accomplish this purpose is shown in use in one of the accompanying pictures. It consists of a flat metal plate with cut-out slot to hold an indicator in inverted position or with its flat side up.

Directly above this slotted plate is a movable steel bar with tapered edges made to exactly fit the size and contour of the channel. This bar is attached to a vertical steel rod which may be raised and lowered by means of a hand lever. This rigid precision bar compensates for any variation in size, and will even straighten out a 1/64-in. bend in the channel while the opaque material is being sprayed on the back of the indicator.



Lucite gadget in inverted position and metal mask pressed into place to shield the small channel from spray of opaque aluminum paint which is first applied.

Sequence of Present Coating Operations

When the lucite items come from the molding room they are carefully wiped with a cloth dampened in industrial alcohol, to remove any dust particles. Then one indicator at a time is put through the masking-spraying operation. The moulded lucite item is placed in the slotted plate, the masking bar is

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lowered to fit into the channel, and the operator sprays a coat of opaque aluminum lacquer over all of the back surface except the shielded slot. The masking bar is raised, and the indicator is placed on a flat fiber tray to air-dry for three to four hours.

Finishing Foreman of the Chicago Die Mold Mfg. Co., reveals how a difficult masking problem was solved to successfully coat the backs of small plastic oven-heat indicators for new Hotpoint electric stoves.

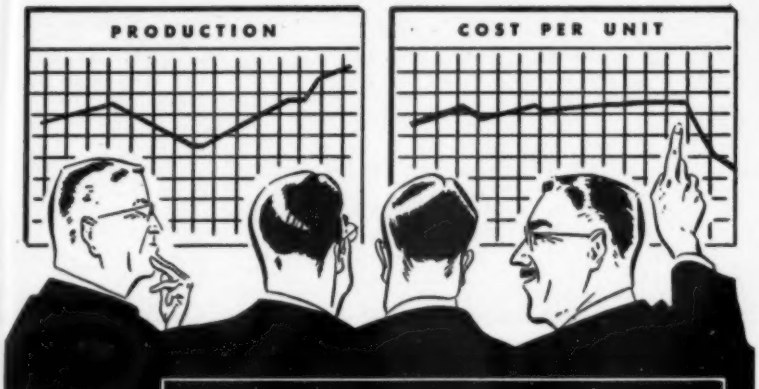
Next, the indicators are placed in metal racks, edge to edge, 50 on each side, with the slotted side up, as shown in one of the illustrations here. Just beneath this rack is a piece of prism glass under which there are three fluorescent tube lights extending the full length of the rack. When these lights are turned on, it is possible for the operator to see clearly through the channels of the indicators. *This is done so that a correct film thickness of transluscent aluminum lacquer may be applied to channels.*

The film of transluscent aluminum lacquer, which is sprayed in the channel, must be heavy enough to match in color the surrounding areas of opaque aluminum, and to hide the red coat which follows, yet this transluscent coat must not be sufficiently thick to obscure light.

Spraying transluscent lacquer in channels (and over the backs) of indicators as they lay edge to edge in a rack over a light box. Correct film thickness is important.

After the backs of indicators, including the channels as just mentioned, have been sprayed with transluscent aluminum the indicators remain in the racks from five to ten minutes to air dry. Then the backs of the indicators are sprayed all over with a coat of transluscent red lacquer. The film thickness of this coat must also be determined by the light panel under the racks. Following this final coating operation the indicators are allowed to air dry for about 30 minutes before they are packed for shipment.

Here, careful accurate masking and spray painting are necessary, yet the coating is neither for decorative nor protective purposes.



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Attractive Finishes For WOOD

By Edwin Hogstrom

CONSIDERABLE interest is being shown today in the simulated bleached finishes that came into popularity recently. While these finishes are popular, many finishers do not seem to understand the methods that should be followed to get a uniform finish on one piece of furniture to match another piece in a set, as for example, tables and chairs, beds and dressers, etc.

Color Base, with Contrasting Filler

Practically unlimited effects can be produced by the use of colored base coats and different colored fillers. Any open grain wood, such as walnut, oak, mahogany, chestnut, etc., will take this kind of finish.

When selecting the finish for some particular item it is well to keep in mind that a base coat and filler of contrasting color will make a pleasing and outstanding finish; for example, a black background with a filler of white, green, gold, or silver. Or the reverse—a white base, with filler of grey, black, brown, green, gold, blue or other combinations that will be in contrast with the white base coat.

Some of the most popular finishes include a steel gray background with white filler; French grey background with white filler; soft brown background with white filler; and many shades of oak colors to simulate limed oak by using white filler.

Few manufacturers have tried the pastel colors for finishing these woods, but I believe they will have their day, too. Color, if rightly chosen, will fit very well in the modern trend.

Materials and Methods Suited for the Job

The base coats for this finish should be low in solids so as to avoid building too much of a film on the wood and covering the pores. The more open the pores can be, the

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better the contrast will show after filling. While the solids of the undercoat should be low, the viscosity does not have to be thin. Too thin a mixture would tend to close the pores, and it would lay in a wet coat on the wood when sprayed.

The base coat should be sprayed, but not too wet, more to the dry side. This will keep the pores of the wood open. The base coat should be made on the gloss lacquer type, not from semi-gloss or the sanding sealer bases. Reason for this is that when filling, the naphtha solvents will be more apt to soften a stearated type of base coat than the gloss type of base. The result, when filling over a semi-gloss or flat base, is that usually some of the color will be pulled up with the filler and will be difficult to get a good clean finish.

Where the base coat is furnished in a sanding sealer type, it would be a good practice to spray on a very thin coat of good clear gloss lacquer before filling. Take care to avoid putting on a wet coat.

The Filling Operation Wiping and Drying

After letting the base coats dry thoroughly, the filling operation is next. Do not use the same heavy consistency that is used for filling regular stained walnut, mahogany and oak. Use a thinner mixture, say a 4-lb. to 5-lb. mix; that is, 4 to 5-lbs. of filler to one gallon of naphtha. Also, let the filler dry a little longer before wiping off the excess. Follow the same procedure as in regular finishing; that is wipe across the grain first and then clean up lightly with the grain.

This filler should dry about two hours. Then proceed, as with any other finish. When using a sanding sealer over the filler, reduce the sealer, and do not try to put on too wet a coat. Sand the sealer lightly and use one or two clear top coats, as desired.

Some woods, although of the open pore variety, still do not have a deep enough pore to show prominently when filled. Sometimes, to make a more pronounced pore effect in oak, walnut or mahogany, the wood may be rubbed with coarse steelwool, with the grain, or it may be brushed lengthwise with a wire brush before spraying on the base coat. This will deepen the pores considerably. Other odd effects are obtained by sandblasting the wood before finishing, and then finishing the piece in very contrasting colors.

One feature of this system of finishing is that the distinguishing grain of the wood can be kept, and a modern light finish is obtained without bleaching. Different colored pieces of wood can be used in the one article of furniture. Care should be taken, when sanding, that the edges are not sanded through and that all repairs are done before finishing, because it is difficult to patch this finish after it is completed.

Resigns from Devoe & Raynolds

Devoe & Raynolds Co., New York, N. Y., announces the resignation of Mr. William H. Mathews, Vice President and Director of the Company, effective as of December 31, 1948. Mr. Mathews had been in charge of the Trade Sales Division of the Company, and joined Devoe & Raynolds in 1939.

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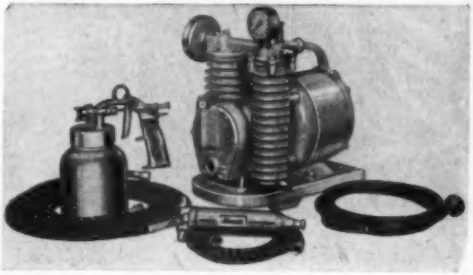

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Coatings for Paper Forms

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Several concerns in your city can supply coatings for moulded paper forms. In a letter to you, we are naming them.

We do not find the material called, "Krink-A-Lac" in the Trade Mark Directory of the National Paint, Varnish & Lacquer Association. Ask New Wrinkle, Inc., 1771 Springfield St., Dayton 3, Ohio.

Coatings for Masonite

Would you kindly give us an expression of opinion as to comparative merits of lacquer and baked enamel finishes on Masonite Temprtile, particularly pertaining to cost, application and durability? Also, a comparison of finish and quantity production, as between roller coating and automatic spray?—M.I.L.

A baked enamel finish would probably be more durable than lacquer, but a testing laboratory could take different materials, make tests and then submit the exact facts and figures for you.

As to roller coating and automatic spraying, both will produce excellent results when and if they are used properly. For comparison, consult a qualified finishing engineer and the leading manufacturers of the two types of equipment.—Ed.

Can Furnish Lacquer for Wet Aluminum

In November issue of Industrial Finishing, page 128, under the heading of "Lacquer to be put on Wet Aluminum", we find that one of your readers is seeking a suitable material for use on partially wet aluminum surfaces.

One of our products, known as Water Dip No. 33, was developed for use over wet metals and will serve as a protective coating after it is dry. After the metal part, or parts, are withdrawn from the last cold water rinse it should then immediately be immersed in a tank containing Water Dip No. 33.

Not only will Water Dip No. 33 preclude the danger of rust and corrosion but it will eliminate hazards developing from finger-printing.—Maas & Waldstein

Faster Paint Drying; Electro-Detearing

We are interested in a method to hasten paint drying. If possible, please send us more information on the method of preventing the clinging tear drop, through the use of a high-voltage, low-amperage electrostatic field.—S.D.Co.

To speed up paint drying, see your paint manufacturer and ask if his chemists or formulator can develop or furnish a faster-drying material without sacrificing other desirable qualities. Several fast-drying finishing materials are on the market. Read the advertisements in any issue of this magazine.

Or plan on oven-drying your paint and enamel coatings. Use either gas-fired or infra-red electric ovens. Concerns that supply the information and equipment advertise in most issues of this magazine. Look over the advertising pages.

Referring to the electrostatic removal or clinging tear drops of paint or enamel from dip-coated or flow-coated metal items hanging from an overhead conveyor, this subject has been publicized in these editorial and advertising pages repeatedly during the past 12 years. The manufacturer of the equipment for both electrostatic detearing and electrostatic spraying is Ransburg Electro-Coating Corp., 1238 Barth Ave., Indianapolis 7, Ind.—Ed.

Detecting Glue Spots

Our finishing foreman would like to know if there is a type of chemical dye that can be put into the glue being used in our cabinet room, whereby you could use a black or colored light to detect excess glue left on the surface of the case before it receives a stain coat.—H.F.Co.

An editorial article on the subject, and a full-page advertisement appeared in October and November 1947 issues of Industrial Finishing Magazine. As you will notice by the full-page advertisement, information and materials can be obtained from Grand Rapids Varnish Corp. of Grand Rapids 2, Mich.

Incidentally, we strongly urge you to keep all back copies of Industrial Finishing Magazine on file for future reference. It just happens that we have tear

(Continued on page 88)

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Lawrence-McFadden Co.
Lenoir Wood Finishing Co.
Lilly Co.
Lilly Varnish Co.
Lindeman Wood-Finish Co.
Maas & Waldstein Co.
Murphy Finishes Corp.
Perfection Paint & Color Co.
Randolph Finishing Products Co.
Reliance Varnish Co.
Robertson Co.
Rockford Varnish Co.
Schaefer Varnish Co.
Security Paint & Varnish Corp.
Edward J. Shannon Co.
Southern Coatings & Chemical Co.
Southern Varnish Corp.
Gilbert Spruance Co.
Standard Industrial Products, Inc.
Trojan Lacquer Co.
L. R. VanAllen Co.
Wabash Products Co.
Wolverine Finishing Materials Co.
Woodfinishing Products Co.

CANADA

Murphy Paint Co., Ltd.
Penfound Varnish Co., Ltd.

CHADELOID CORPORATION 1771 SPRINGFIELD ST., DAYTON 3, OHIO

sheets of these two pages to send you. Practically all of the copies of every issue of this magazine are mailed to readers. The few copies retained here in the office are soon mutilated or sent out in response to inquiries.—ED.

Roller-Coating Small Cylindrical Shells

We have an application for coating small cylindrical shells, from ½ to 1-in. in diameter, with a length up to 4-in. Please advise whether there is any commercial equipment available for roller coating such work. If there is, we would like to have names of companies handling such equipment.—P.&A.Co.

We do not know of roller coating equipment for this purpose. Most of the roller coating machines with which we are familiar are designed for coating flat sheets of material.

We have seen pictures of machines at work coating and printing flexible tubes —such as tooth paste tubes—but we are not sure who manufactures them. It occurs to us that they would be rather complicated and expensive. You might communicate with one or both of the following concerns: Rutherford Machinery Co., Divn. General Printing Ink, 100 Sixth Ave., New York 15, N. Y.; John Waldron Corp., New Brunswick, N. J.—ED.

Filler Padding Machine

Will you please advise me who makes or sells portable filler padding-in machines, as mentioned in your excellent 25th Anniversary Issue of INDUSTRIAL FINISHING?—S.T.Co.

The filler padding machine is made and sold by N. A. Strand Co., 5001 N. Wolcott Ave., Chicago, Ill.—ED.

Cleaning and Reclaiming Solvents

Looking over some old issues of this magazine, we ran across an article on page 17 of the February 1937 issue regarding, "Cleaning and Reclaiming Solvents". You state that the manufacturer's name of the industrial still discussed in the article would be given on request. May we have this name, as well as the names of any other similar articles that have come into the field since that time.—B.C.Co.

A number of these articles have appeared in INDUSTRIAL FINISHING and we are sending you tear pages of some of those that were in the 1940 issues. Others are not now available, as we had so many requests for them that our supply of old copies and tear sheets of the articles are exhausted.

According to our record, articles on this subject (in addition to those we are sending you) appeared in September 1940 (page 54); February 1940 (pages 14-21); January 1939 (pages 87 and 88); May 1938 (pages 26-28), etc.

In a letter, we are listing names and addresses of concerns that make or sell equipment such as you mention.—ED.

Natural Pearl Essence

We are interested in natural pearl essence and its application in pearl dipping and for automobile bodies. We are wondering whether any articles on this subject have appeared in your magazine; if so, we would appreciate receiving reprints of them. Can you direct us to some technical articles which might have appeared elsewhere on the same subject?—G.R.Co.

Several years ago a few articles on this subject appeared in I. F. We may have another ready soon. In a letter we are directing you to manufacturers who can supply further information.—ED.

Crack Eradicator

This is in reference to the article on page 130 of November 1948 issue of INDUSTRIAL FINISHING. You called it "Crack Eradicator". Please let me know the proper source of this, so that they can give me first-hand information.—H.K.Co.

You can obtain "Crack Eradicator" from H. Behlen & Bro., Inc., 10-12 Christopher St., New York 14, N. Y.—ED.

Industrial Ovens

Will you please give us the address of Industrial Ovens, Inc., whose coating machine is illustrated on page 140 of November issue?—C.E.Co.

The address is: 13825 Triskett Rd., Cleveland 11, Ohio.—ED.

An Unfortunate End

It would be "telling" to reveal names, but the reminder of what can happen to a "healthy" concern is the main point we have in mind. A recent letter from one of our good friends starts out as follows:

"Unfortunately _____ Co. has just undergone an internal disturbance which has split the owners into two hostile camps. The two factions have been unable to reconcile their differences and, as a result, a profitable, never-in-the red business has been sacrificed. *(To page 90)*

Introducing a Process of Wood Finishing

PROT-O-CEL PROCESS One application of base sealer S100 plus one coat of PROT-O-CEL AR-100 equals any three coats you are using now. With the PROT-O-CEL PROCESS *you get one-third more coverage* under actual production standards... *you save one-third of your wood finishing costs* in time, labor, and material.

PROT-O-CEL PROCESS Starts with S100, a cellulosic base sealer, containing up to 30% solids. It touch-dries in a few minutes, sands easily, and is ready for the second coat in half an hour... correctly formulated to meet your specifications.

PROT-O-CEL PROCESS Ends with PROT-O-CEL AR-100, the tough cellulosic finish made from natural proteins. Watch PROT-O-CEL level off with its 40% or more solids content —no preheating required and it can be formulated to fit your most exacting requirements.

Use the PROT-O-CEL PROCESS in your own finishing department and note its efficiency and economy. Write today and ask us to send you one 5-gallon can each of Seal Base S100, PROT-O-CEL AR-100, and PROT-O-CEL REDUCER XX-100 at the drum price.

ARNY CHEMICAL CORPORATION PROT-O-CEL PROCESS TRADE MARK

INDUSTRIAL DIVISION

55 WEST 42nd STREET NEW YORK 18, N. Y.

SYNTHETICS • LACQUERS • SEALERS • PRIMERS • ENAMELS

"The personnel was given very little notice that 'their services would no longer be required' (today is our last day) and I am, therefore, actively searching for a new position."

Waste Coat?

A youngster, watching a house painter at work, asked, "How many coats do you give it?"

"Two," said the painter.

"Then", said the boy, "if you gave it three coats, would the third one be an overcoat?"

"No, sonny", said the painter, "that would be a waste coat".—C. Syer.

Rock Hard Putty

The writer used to be with another casket company where we used a compound to fix up defects in the wood before finishing. This was a light brown powder which we mixed with a little water. It hardened up well, could be sanded and finished, etc. We knew it as "Rock Hard Putty", which I think was the commercial name. I think we got it in Chicago, but cannot remember the name of the manufacturer. Can you help me out?—W.E.C.

In a letter we are sending you the names and addresses of several manufacturers of putty suitable for your purpose.—ED.

About Tall Oil

In the March 1948 issue of this magazine, there is an article on Tall Oil (pages 128 & 130). In this article mention is made of a report for sale by the Office of Technical Services, Department of Commerce. (A 24-page report for 75 cents).

There was no mention of the city in which this Department of Commerce is located and as I would like to have the report I would appreciate your letting me have the name of the city and state from where I can purchase it. When I read the article I thought it would be in Washington and sent to that city for the report. I am wondering if I have made a mistake? —M.F.

If your letter comes back undelivered we suggest that you direct your inquiry as follows: U. S. Department of Commerce, Wm. R. Tilley, Technical Reports Section, National Bureau of Standards, Washington 25, D. C.—ED.

Fast-Drying Finishes

On page 32 of the November issue of INDUSTRIAL FINISHING there is an article entitled, "Fast-Drying Synthetic Finishes Developed". I am interested in fast-drying finishes and I am wondering where I could learn more about the subject discussed in your article?—P.D.H.

The paragraph heading to which you refer is part of a feature article, "25 Years of Industrial Paint Progress", beginning on page 30 and written by Mr. Paul O. Blackmore of Interchemical Corp., Finishes Division, 57 State St., Newark 1, N. J. We suggest that you write directly to Mr. Blackmore and tell him specifically what you have in mind.

Also, read the advertisements in several issues of INDUSTRIAL FINISHING, and write to those firms whose ads indicate that they may have a fast-drying material.—ED.

Where is "Donlac Corp." or the Product Called "Plaz"?

We have been trying to locate a company which originally was known as the Donlac Corporation of Chicago, Ill. Before the war they manufactured a lacquer plasticizer known as "Plaz", and we are interested in getting some of this material. —C.C.Corp.

Sorry, we don't know. Can some reader help us?—ED.

We Do Screen Stenciling and Flock Finishing

Will you kindly furnish us the names and addresses of the three published inquiries from Maine, New York and Illinois, for firms to do Silk Screen Printing, Flock Finishes, and on Flock and Flock Adsesives? (Three inquiries published in Sept. 1948 issue). We own and operate an industrial finishing factory in which we do all of the above mentioned work.—John I. Nissly, 544 W. Mill Ave., Lancaster, Penna.

Information supplied.—ED.

Peel-off Coating That's Not Affected by Lacquer

We are interested in a strippable plastic coating for use in lining metal containers, similar to run-off trays on a dipping set-up. The purpose of the coating should be to enable us to clean the container quickly and cheaply. A coating that cannot be stripped off in sheets, but which will have to be scraped off, will not do in our case. The container will hold synthetic enamels (baking, etc.), and at other occasions lacquer enamels.

We have contacted two manufacturers. Both of these firms can offer a strippable coating which will not be attacked by synthetic baking enamels, but it will be changed by lacquer-base materials, and in turn will tend to contaminate lacquer

MAR-PROOF LACQUER

SCHAEFER'S Mar-Proof Lacquer is a performance-proven finish that cannot be easily marred or scratched.

It's tough—tougher than the ordinary lacquers; meets the most critical requirements of current production.

Made in either clear gloss rubbing or satin finish, it produces a splendid transparent coating of full depth on maple, walnut, gum, mahogany and other cabinet woods.

Economical; gives plenty of coverage and dries quickly. Our Mar-Proof Lacquer Sealer is recommended with it for a first-coater.

Working samples furnished without obligation. Write for them!

THE SCHAEFER VARNISH COMPANY, INC.
Louisville, Kentucky

base materials. For this reason we cannot consider their products.

Can you advise us who can be of assistance to us in finding a suitable material? We are satisfied readers of your excellent magazine, and we would appreciate your help in this matter.—Pyramid Industrial Finishing Co.

In a letter we are submtting names and addresses of several other manufacturers of peel-off or strippable coatings. Perhaps some of these will suit your requirements.—ED.

Silicone Products

We are interested in obtaining more information on Silicone Products which were featured in an article on page 152 of November issue of INDUSTRIAL FINISHING. Will you please send us the address of the manufacturer from whom we can obtain this information?—J.M.Co.

We refer you to Mr. Milton A. Glaser of Midland Industrial Finishes Co., Waukegan, Ill.—ED.

Congratulations on Your 25th

It was with the receipt of your November issue that I learned of INDUSTRIAL FINISHING'S Silver Anniversary of Golden Success.

As one of your readers and an occasional editorial contributor, I want to take this opportunity of passing along this wish for you on the 25th birthday of your enterprise:

Remembering only the best
From the years that are past;
Anticipating only the finest
From the years that are ahead.
—Arthur P. Schulze

May I take this means of congratulating you on the 25th anniversary of INDUSTRIAL FINISHING Magazine. I also want to commend you for the November issue which I think was the best that I have had the privilege of reading. You are to be highly commended for the great contributions you have made to the finishing industry during the past quarter of a century. May your next 25 years be as eventful as the past.—H. W. Chester.

Two Months, Not Two Years

We are interested in the article in December, 1948 issue of Industrial Finishing, page 110, entitled, "New Durable Traffic Paint." Of particular interest is the first sentence of the second paragraph which states, "Test cross lines laid down on a busy intersection show little wear after two years."

In Hercules' "A New Approach to Traffic Paints," a photograph taken August 9, 1948, of a test made at South Camden, N. J., cross strips, "Show, that Pentalyn 802A-Parlon formulation (B) has good visibility, after 2½ month's wear."

From what source did you gain your information, and was the time (two years) based on actual test or on estimated life of the material?—P.L.Co.

We have checked back into this, and "you have one on us." That "two years" should have been "two months." We strive to have everything strictly accurate and authoritative, but in this one case an error occurred here. The Hercules News Release specifically stated "two months."—ED.

Link-Belt Trolley Conveyors Covered in New Catalog

Link-Belt Overhead Trolley Conveyors "Make Ceilings Pay Dividends" is the title of a new 28-page, illustrated Book No. 2330, published by Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

Some 80 illustrations depict a great variety of actual installations and show the flexible adaptability of this type of conveyor.

A copy of new book will be sent to any interested reader upon request, addressed to the nearest office of the company.

Hilo Varnish Appointments

The Hilo Varnish Corporation announced the following appointments:

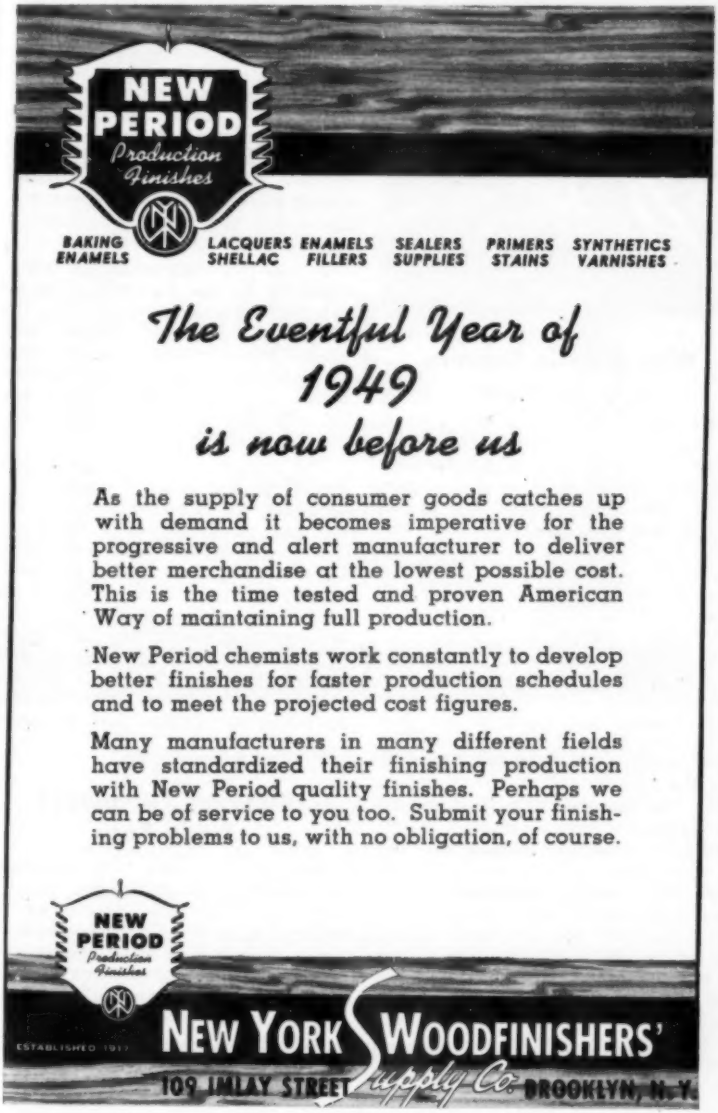
Theodore H. Kleine, Executive Director of Credit & Sales. Alexander Craig, Advertising & Trade Sales Manager. John H. Schumann, Industrial Sales Manager. Joseph E. Hayes, Assistant Credit Mgr.

Kleine has been with Hilo since 1912 and is a director. He started as clerk in the accounting department, then assistant credit manager, and credit manager since 1925. He is well-known throughout the paint and decorating industry of New York and Chicago, because of his efforts in good merchandising. He has often visited many of the industrial customers whom Hilo serves.

Mr. Craig has been with Hilo since 1919. He now adds the supervision of advertising and publicity to his trade sales activities.

John H. Schumann has been with Hilo since 1936, which service was interrupted by five years in the Armed Services, being discharged as a Lieutenant Colonel. He will continue as Executive Supervisor of the Hilo Research Department. He has served as a Director of the company since 1946.

J. E. Hayes, except for the four years he served with the U. S. Air Forces as a Staff Sergeant, has been associated with Mr. Kleine in various capacities at Hilo since 1924.


NEW PERIOD
Production Finishes
BAKING ENAMELS
LACQUERS SHELLAC
ENAMELS FILLERS
SEALERS SUPPLIES
PRIMERS STAINS
SYNTHETICS VARNISHES
The Eventful Year of 1949 is now before us
As the supply of consumer goods catches up with demand it becomes imperative for the progressive and alert manufacturer to deliver better merchandise at the lowest possible cost. This is the time tested and proven American Way of maintaining full production.
New Period chemists work constantly to develop better finishes for faster production schedules and to meet the projected cost figures.
Many manufacturers in many different fields have standardized their finishing production with New Period quality finishes. Perhaps we can be of service to you too. Submit your finishing problems to us, with no obligation, of course.
NEW PERIOD
Production Finishes
ESTABLISHED 1917
NEW YORK WOODFINISHERS' Supply Co.
109 IMLAY STREET BROOKLYN, N. Y.

Why Burn-in Repairs Lift or Raise

We have had considerable trouble on our wood caskets which are finished with two coats of hot lacquer. We burn in on the first coat of lacquer. The burn-in spots are sanded smooth but when the final coat of hot lacquer is sprayed on, the burn-in spots lift or raise up and mar the final appearance of the finish. I will give you a list of our operations.

1) N.G.R. stain.
2) Lacquer sealer.
3) Sand sealer with 6/0 sandpaper.
4) One coat of gloss hot lacquer.
5) Places that need it are then filled with burn-in repair, using lacquer sticks; then these places are sanded smooth.
6) The final coat of satin finish hot flat lacquer is sprayed on.

We are using hot lacquer and like it very much. Where we have used four coats before, by using hot lacquer we have cut down to two coats. Hope this will give you sufficient information about our finishing system to enable you to tell us how to remedy our trouble.—S.R.Co.

The lifting of the burnt-in spots is probably caused by the solvents from the lacquer penetrating and swelling the material. Under these conditions the material would not be likely to shrink back to its original dimensions. The condition is made worse by the fact that you are using hot lacquer. This type of lacquer contains slower-evaporating solvents than conventional materials. Because they are in contact with the burnt-in patches longer than in the case of lower-solids materials, they are more likely to penetrate and cause swelling.

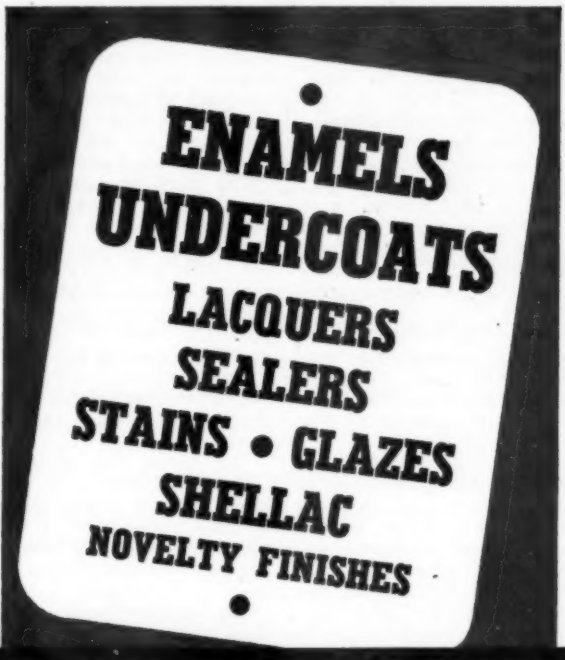
I have two suggestions as possible remedies for the condition. The first is to try burning in repairs with shellac sticks instead of lacquer sticks. Shellac is more impervious to lacquer solvents than is any lacquer-base material, and would not as likely swell by penetration of the solvents from the final coat of lacquer.

The second suggestion would be to spot-spray the repaired areas with a thin coat of dewaxed shellac. This thin coat of shellac should be allowed to dry well (about four hours) before the final coat of hot laquer is put on. It may be impervious enough to prevent lifting of the repairs. The shellac should be put on carefully, taking care to feather out the edges so as to prevent any unevenness in the final coat. A light wet-sanding of the shellac might aid in this.—R.H. WAMPLER.

Rubbing Lacquered Table Tops

We rub our tables with a portable power-driven hand sander, using a mixture of oil and naphtha as the rubbing solution. Can you advise us as to the best type of sandpaper to be used and what combination (quantities) of oil and naphtha we should use to obtain the best results?

Next we rub by hand, using a well-known compound. We would appreciate your advising us as to the best



IN STEP WITH THE TIMES

Industrial Finishes

that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

• FOR APPLICATION BY ALL METHODS

JAMES B. DAY & CO., CHICAGO

material to use for hand-rubbing (rags, steelwool, etc.). We would also appreciate your advising us as to the best compound to be used for hand-rubbing.

Our occasional furniture looks excellent after it has been hand-rubbed. However, occasionally, after a table is packed and if the table is left standing for one week or ten days, the entire surface becomes foggy in appearance and seems to "gray up" with a film. When this occurs, it is possible to remove the foggy appearance by polishing.

We would also like to know what material is good for cleaning the table off after the machine and hand-rubbing work has been completed, since the table is rather greasy at this point.

After the table is cleaned off, what type of wax or polishing solution do you suggest?

Please advise us as to the amount of time recommended between coats of lacquer, and the amount of time that should elapse before rubbing the final coat of lacquer.—A. L. Co.

If you use an oil for the first operation, it should be a light grade of paraffin oil that has been reduced 100% with naphtha. The best grade of wet-and-dry sandpaper to use for this work would be No. 320 grit. After the furniture has been sanded with paraffin oil and naphtha, it is best to wipe the rubbed surface with a soft rag dampened in pure naphtha.

For the hand-rubbing operation I would suggest a 3/0 steelwool that has been prepared as follows: First dampen the steelwool in water; then add a small amount of 3-M (black) compound and give the furniture a good rub with the grain, always using full length strokes. This operation should be cleaned up with a soft rag.

As for the clean up, one of the better methods is as follows: Fold cheesecloth into a pad about 4-in. square and dampen in water; then work a very small amount of 3-M (black) compound into the pad and rub with the grain until the desired luster is reached. (The operator can determine just the right amount of rubbing, after a short time.)

The third operation should stand long enough for the compound to semi-dry; then the furniture can be cleaned up and polished with a soft rag. This last operation is very important because it will eliminate the foggy appearance after the furniture goes into the carton—and it also eliminates the use of a wax or polish.

Under normal drying conditions (room temperature) 25 to 30 minutes drying time between coats of lacquer is sufficient.

The drying time of lacquer before rubbing will depend on drying conditions, type of lacquer used and type of pack to be used. I suggest that you consult your lacquer source for the recommended drying time.—J. W.

For rubbing lacquer with a power hand sander I prefer to make the initial cut with No. 360 wet-or-dry sandpaper, and finish with No. 400 wet-or-dry sandpaper. For the lubricant I prefer a mixture of equal parts of rubbing oil and mineral spirits.

For hand-rubbing, I think it is hard to beat clean cotton waste. Such waste is excellent for cleaning, and will not scratch the surface. Of course, if you desire a dull-rubbed finish, the hand-rubbing may be done with very fine steelwool (no coarser than No. 4/0) dipped in a good liquid wax. For a higher sheen, however, I think the clean cotton waste is best.

There are many compounds available for hand-rubbing, and I would hesitate to name any one as best. My own preference is to hand-rub with an abrasive-free emulsion furniture polish such as you can obtain at any

1938 **1948**

NEW YEAR'S GREETINGS

We wish to take this means of commemorating our Tenth Anniversary, and to express our sincere appreciation to our friends, suppliers and customers for the many kindnesses and courtesies that have been extended to us during our first decade in business.

As we begin our eleventh year may we extend best wishes to you for a very Happy, Successful and Prosperous New Year.

All Exterior and Interior Surfaces of the Freedom Train are finished with KIRCO Lacquers, Synthetics and Adhesives.

KIRCO MODERN COATINGS

Kirker CHEMICAL COMPANY

ONE EAST ELEVENTH STREET • PATERSON 4, NEW JERSEY

store. Pour a little of the furniture polish on a wad of the waste, sprinkle on the surface a little of the finest rottenstone you can get, and then rub. This procedure always gives good results. The rottenstone furnishes just enough abrasive action to remove the coarser scratches and bring up the sheen.

Instead of the emulsion polish, you can use a so-called "soluble" rubbing oil. This is a rubbing oil which is added to about 8 or 9 parts (or times its own volume) of water. This material is valuable for removing the oil and grease left from previous operations.

The greying or fogging of the finish, which you mention, is probably due to oil and grease left on the film. After the rubbing operation the oil and naphtha mixture should be wiped off carefully. If you will then hand-rub with the "soluble oil" emulsion mentioned in my previous paragraph, most of the grease will be removed. Then clean off carefully with clean waste, adding a very little rottenstone, if necessary, to absorb the last traces. This final cleaning off is perhaps the weak link in your present rubbing system, which causes the trouble.

After cleaning off which follows the machine and hand-rubbing, you might wax with a paste wax to improve the feel or slip, and to preserve the sheen. A good auto wax is best. Apply a very little, using clean cotton waste, and polish until it no longer smears under the finger tips.

I do not think the time between lacquer coats is important. Some finishers recoat in 30 minutes, and some allow 24 hours or more. The important thing is that the surface be completely dry before you begin rubbing. Air drying 24 to 48 hours is the usual practice. The more time you allow, the better. Or force-dry overnight (15 to 18 hours) at 110° to 120° F. If you rub too soon, the finish may shrink and the hazing or fogging you mention will become worse. Try 48 hours of air drying and see if the sheen does not "hold" upon aging. You can then cut down the time until you find where it begins to haze.

I think I should mention that good rubbing procedures should aim for complete removal of all traces of grease and oil in order for the lacquer to retain its original brightness. If you will judge any procedure by the effectiveness with which it does this, your hazing and fogging will no longer be a problem. — ROLLIN H. WAMPLER.

The type of sandpaper to use in oil rubbing is not so important, but aluminum oxide is fast cutting and does not clog as rapidly as some wet-or-dry abrasive papers. Silicon carbide papers are used extensively also. Regular rubbing oil, used straight, is preferred in many shops. Some naphtha can be used, but if much naphtha is used it will tend to dry up too fast to give proper lubrication to the rubbing machines. All surplus oil should be removed from the surface before starting to compound.

Compounding can be speeded up by use of very fine steelwool and compound, and then cleaned up for a dull rub; or follow the steelwool with soft rags and compound, and rub dry for a high luster. (There is no "best compound"; it is a matter of individual preference. I like Ken-nite. It comes in different grades for machine or hand rubbing.)

The foggy appearance you mention is known as "oil bloom" and is caused by the excess oil left on and in the lacquer film when the table was rubbed. A water emulsion clean-up polish will usually remove this oil quickly—unless the table was rubbed too soon after the last finish coat was applied; in other words when the sur-

H. J. Nelson Fixture Company, Minneapolis, Chooses

PYRO-CELLO-FILM

for unique "Salad Bowl" Bakery Fixture*

PYRO-CELLO-FILM was selected because it enhances the beauty of the laminated solid birch used in this unusual example of fine wood craftsmanship. PYRO-CELLO-FILM gives a lustrous finish that is completely heat, water and scratch resistant—impervious to grease, alcohol and acids. Leading manufacturers of wood products use PYRO-CELLO-FILM. Why not try it?

PYRO-CELLO-FILM is an exclusive development of the American Varnish Co.

Seeing is Believing! We will finish one of your wood products with PYRO-CELLO-FILM without cost. Then you can see for yourself how wonderfully it solves your finishing problems. Write us today!

*Boulevard Twins Restaurant, 5300 Lyndale Avenue S., Minneapolis, Minn.

SUPERIORITY UNIFORMITY

AMERICAN VARNISH COMPANY

1128 N. North Branch Street
Chicago 22, Illinois

Manufacturers of varnishes — paints — stains — lacquers — synthetic enamels—cello film—soldering flux and special coatings.

face was not entirely dry. This, then, must be repolished. (I prefer 3-M clean-up polish.)

I don't like to use waxes over a rubbed finish. The oil that may be left in the film or on the surface seems to retard the drying of the wax and keeps the wax soft. As a result the surface always looks smeared and greasy. Many manufacturers use this method, but personally I do not care for it.

The length of time between coats and the length of time before rubbing after the last coat of lacquer will be governed largely by the lacquer being used. A (5 to 6 cycle cold-check test) lacquer can be rubbed in an hour, if it was not applied too wet. Longer cycle lacquers (10 to 15 or 25-cycle lacquers) should not be rubbed sooner than overnight or longer. Of course, you can rub heavily plasticized lacquers sooner, but they will be soft and will probably bloom after rubbing, as mentioned before.

To help prevent this bloom and to make the clean-up work easier, you should try the water-oil emulsion type of rubbing medium. It is not nearly as messy, and it can also be used as a clean-up polish when a small amount of vinegar is added to the solution and shaken well.

The time wait for drying between coats will depend on the type of lacquer used—the solids of the lacquer, as applied to the object, and the solvents that went into the formulation of the lacquer; and how much is applied—a wet flow coat or a dry coat. So there are many things to consider, especially in long distance engineering.

Your lacquer manufacturer can tell you the cycle of his lacquer and the drying time required before this particular formulation should be rubbed.

I suggest that you get a list of compound manufacturers and also clean-up polishes. Try them all and use the one that works best for you; I mean the one that your rubbers like, because if the people using the product dislike it, you won't have much success with it regardless of how much merit it has.—ED HOGSTROM.

Screen Process Organization Now a Reality

Approximately 100 members of the screen process industry met in the Bismark Hotel in Chicago last October and formed the Screen Process Printing Association, International. Purposes of the Association are to:

1) Conduct an educational and promotional program to expand and benefit the industry.

2) Acquire from and disseminate among the members any industry information which might be desired by members from time to time.

3) Promote the standardization and simplification of materials by the industry.

4) Establish and maintain research facilities for the general advancement of the industry.

5) Establish and maintain a central office to coordinate the industry program, and to cooperate with other industries for the benefit of the screen process industry.

6) Promote the development of unexplored markets beneficial to the industry.

7) Act as a neutral agency to assist the industry in the solution of mutual problems.

The organization will include as active members, firms engaged in screen process work; and as associate members, manufacturers and distributors of materials, equipment and supplies.

Present officers of the Association are: President, John W. Key, of Admiral Screenprint Corp.; Vice President, S. R. Snider of Snider's Poster Process Co.; Treasurer, W. A. Reincke of Oil Color Litho Co.; Executive Secretary, Edgerton Hart. Address of the Association is 332 S. Michigan Ave., Chicago 4, Ill.

Detro Mfg. & Sales Co. Moves Into New Plant

Detro Mfg. & Sales Co., Inc. of Los Angeles, manufacturers of Detroit Handy "Tac" Rags, Detro Super-Flex Sanders and Polishers, and lamb's wool polishing bonnets and discs, announces completion of its new factory at 3429 Wesley St. Culver City, Calif.

Moving was completed in November and production is now underway with all new, competely modern machinery and equipment. The building is of one story cement block construction with approximately 15,000 sq. ft. of manufacturing area available.

Mac's

FASHION FINISHES

LACQUERS

Available in clear and opaque, for application to surfaces of all kinds. Spread easily and give good coverage. Any sheen desirable. Attractive, outstanding finishes.

SEALERS

Ideally suited as first coat materials under clear gloss or flat lacquers. Give good body and sand easily. Also, work well under varnish and enamel! Try them!

VARNISHES

None better! Whether for dull, satin or gloss effects, Mac's varnishes will be found most economical and appropriate as finishing coats on low, medium and high priced goods.

STAINS

These are stains of distinction, with an established reputation for the highest quality. We've been making them since 1875. Mac's stains can be supplied for every need.

FILLERS

The Mac's Fashion line includes the more commonly used oil paste fillers as well as the quicker drying materials of recent development. Keep abreast of the times with Mac's fillers.

PRIMERS

Mac's Fashion primers insure full coverage and absolute protection as first coaters on metal, forming firm and lasting foundations on products subject to severe treatment and abuse.

ENAMELS

For wood, metal and other surfaces, air dry or bake. Mac's Fashion enamels, properly applied, stand up under all conditions to which painted articles are subjected.

WOOD BLEACH

Mac's Fashion bleach will bleach all kinds of wood including mahogany. Dries overnight to a definite bleached effect ready to sand, and ready for the regular finishing schedule. Samples on request.

THE LAWRENCE-McFADDEN CO.

Write for Production Test Samples

7430 STATE ROAD PHILADELPHIA 36, PA.

Headquarters for Fine Finishes Since 1875

Random Comment on the Industrial Scene

(Continued from page 8)

diminishing supply of cedar, not only through growth of new timber, but also through encouragement of proper growing and cutting practices. Owners of growing timber are being urged to let small trees grow, while harvesting the mature trees.

* * *

Fast Paint Tester. A new machine for testing the durability of paint has been developed. Adhesion may be determined in a matter of seconds.

The material is applied to a metal cap which is screwed on the end of a duraluminum cylinder. This cylinder is attached to an electronic source of high-frequency sound waves. The cylinder vibrates violently many thousands of times per second to shake the coating loose. The force of vibration required to cause peeling is calculated, and from this the life expectancy of the material under normal conditions can be determined.

* * *

Keep Up With Science. "The challenge to modern engineering is to produce more and more from limited natural resources", declared Dr. Harold Vagtborg at a recent meeting of the American Society of Mechanical Engineers, held at the Pennsylvania Hotel in New York. Dr. Vagtborg, who is president of the Southwest Research Institute, declared further, "In the fields of construction, transportation, power and industry in general, technological advances depend upon fundamental scientific discovery."

With many raw materials becoming more scarce each year, industry will have to look to the laboratory to develop substitute materials that may prove better than those they replace.

New White Paint. A new white paint for outside use has been announced. It is made with soybean oil. This oil has been used previously in paint, but did not dry fast enough. Accordingly some chemical compound had to be added. This paint uses only soybean oil, and it dries rapidly.

* * *

Aluminum is no longer a single metal but a large family of metals, each with its own peculiar properties. To make an intelligent selection, the user must have definite information as to alloys, tempers, sizes, shapes, physical properties, chemical properties, mechanical properties and fabricating characteristics. To meet this demand for factual information on aluminum alloys and mill products, Reynolds Metals Co., Louisville, Ky., has prepared a handy 162-page book.

* * *

Take Problems To Doctor. The Socony-Vacuum Oil Co., is pioneering in a plan to transfer administration of its human relations department from industrial relations to its medical department. It is believed that employees will take their intimate problems to the doctor with greater confidence because then their personal affairs will not become generally known throughout the organization.

Too often production suffers from the employees' worries and problems which have nothing to do with their jobs. It is hoped that the doctors will be able to prescribe ways and means to cure social or financial ills as well as physical ailments.

* * *

A paper tape strong enough to compete with metal strapping and rope for heavy duty packaging is announced by Minnesota Mining & Mfg. Co., St. Paul 6, Minn. It has a tensile strength of 180-lbs. per inch of width. The tape is thin and flexible.

Ablon

INSTEAD OF ASPIRIN, TRY THIS . . .

Nobody—but nobody loves a headache. Except maybe the remedy manufacturers who rub their hands with glee whenever the newspaper headlines scream the day's troubles.

And next to a United Nation's meeting, a finishing department is where headaches and bottlenecks bloom best.

Our business is to keep headaches from happening to our friends. And all our customers are our friends.

To accommodate more happy customers with short-bake *Ablonite Synthetics* which are developed for optimum performance, we are expanding our technical staff, adding the very latest equipment to our new and modern plant. You, too, are invited . . .

ABLON
Finishes Incorporated

EXCELLENT SYNTHETIC and WOOD FINISHES

84 Waydell Street • Newark 5, New Jersey

☛ *Salesmen looking for a change for the better, see page 130*

Two New Strippers

Enthone, Inc., 442 Elm St. Dept. IF, New Haven, Conn., announces the development of two new strippers for synthetic enamels—Stripper S-17 and Stripper S-19.

Stripper S-17 is a clear quick evaporating stripper for removal of all types of synthetic enamels, including heavy coatings of enamels that accumulate on work holders and hooks. It is also used for the removal of clear synthetic enamels from highly polished surfaces such as brass, gold plate and silver. It does not tarnish metals and it has no significant odor.

Stripper S-19 is similar to stripper S-17 in its action and appearance, except it contains some ammonia. It is used in certain special cases for removal of synthetic enamels where stripper S-17 is not satisfactory.

Both materials are used with water seals to minimize evaporating losses. Rinsing is not necessary after the use of these strippers.

The work to be stripped is immersed in the strippers at room temperature. After a few seconds to several minutes, the enamel is completely removed from the surface of the metal and the parts can be removed. The stripper evaporates quickly and the part is ready for refinishing.

Cleaning Compounds for Metal

Two metal conditioners that feature new developments in phosphoric acid cleaners are announced by Klem Chemicals Inc., 14401 Lanson Ave., Dearborn, Mich. The products are known as Rust-Sol No. 123, for wash-off or immersion type of cleaning, and Rust-Sol No. 113 for wipe-off or hand application. Both cleaners have excellent wetting and dispersion qualities. They emulsify oil and grease and penetrate the oil coating to the steel surface where they dissolve rust and oxide with a reaction that leaves a protective iron phosphate coating. Welding flux, soldering acids and other corrosive salts are dissolved and neutralized by these two cleaners.

Rust-Sol No. 123 may be diluted with three to four parts of water. This same cleaner used at about ½ of 1% by volume makes a good rinse after alkali stripping to provide a positive base for painting. Rust-Sol No. 113 works with dilutions containing two to three parts of water. It is non-toxic, non-inflammable and also non-corrosive.

Paint Circulating Systems

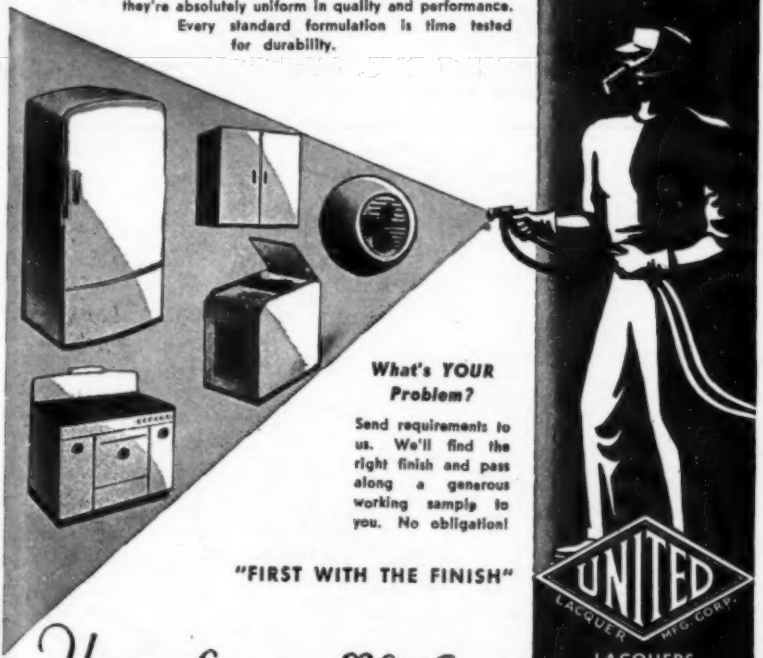
Paint circulating systems, which enable manufacturers to finish parts and sub-assemblies in different departments of a plant and have them come together on the assembly line in perfect color match and finish, are described in the new Paint Circulating Bulletin No. 550, of Binks Mfg. Co. 3114 Carroll Ave., Chicago 12, Ill.

In such a system the primary considerations of perfect color match and finish are attained by mixing all paint materials at a central location, where color, viscosity and other characteristics can be controlled under laboratory conditions. From here materials are piped to spray stations located at any

YOU'RE ALWAYS IN FIRST PLACE ....WHEN YOU FINISH WITH UNITED

UNITED LACQUER PRODUCTS have "what it takes" to keep production and sales both moving fast. Free flow, rapid drying, and a hard, tough, perfect finish increase the "eye appeal" of your furniture, fixtures and appliances.

UNITED High Speed Lacquers have been tried, tested and proved superior by manufacturers. In gloss, satin or dull finishes they're absolutely uniform in quality and performance. Every standard formulation is time tested for durability.



What's YOUR Problem?

Send requirements to us. We'll find the right finish and pass along a generous working sample to you. No obligation!

"FIRST WITH THE FINISH"

United Lacquer Mfg. Corp.

General Office, Laboratory, Factory: LINDEN 3, NEW JERSEY
New England Plant: EVERETT, MASSACHUSETTS

UNITED LACQUER MFG. CORP.

LACQUERS
THINNERS
SYNTHETICS
METALLIZED FINISHES
SPECIAL COATINGS

point throughout the plant. The secondary merits of such a system in lower insurance costs, economies in handling, transportation and storage, as well as more efficient and lower-cost production, make such installations profitable to industries using as little as 50-gallons of paint a day.

Basically, a paint circulating system constitutes a closed circuit or "loop" through which the paint is kept in constant circulation, even when the system is not in use. Outlets at each spray station deliver exactly the same kind of paint, without variation in color or consistency. The pipes must be of adequate size, with long, sweeping bends instead of abrupt turns and angles. Railroad unions are used instead of standard couplings in order to preserve the smoothest possible bore.

Because the fluid pressure varies throughout the system as the result of internal friction and pressure drop, a specially designed fluid pressure regulator is required at each spray station. The pressure is set with a key by the foreman, and since the operator has no responsibility for anything beyond the application of paint, production increases and rejects are held to a minimum. The result is lower-cost production. A change from one color to another is merely a matter of picking up another gun, without a break in the production routine.

The focal point of a paint circulating system is the distributing center,

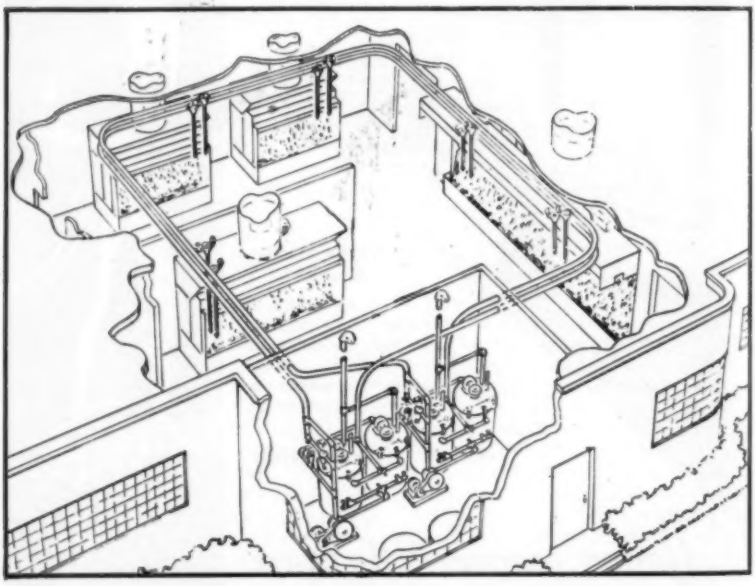
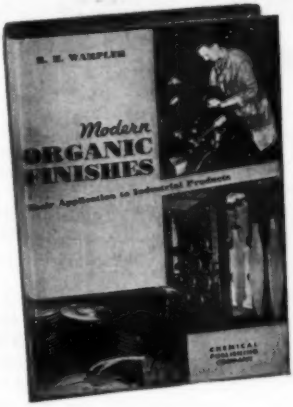


Diagram showing the principle of a modern paint circulating system. From an isolated mixing room the paint circulates through a complete circuit of piping, passes all spray stations, and returns to the tanks. The paint is in constant circulation and agitation.

MODERN ORGANIC FINISHES



"Their application to Industrial Products"

This book contains 452 pages of the latest information on finishing. It describes modern finishing materials and equipment for their application, drying, conveying, etc., so that the reader may have an overall picture of modern industrial applications. Throughout, the main emphasis is on proper selection and use of materials to get the best possible finish at minimum cost.

Contents

MATERIALS: Oleoresinous and Alkyd Varnishes and Enamels; Cellulose Lacquers; Spirit Varnishes, High Integrity and Specialty Finishes; Stains, Wood and Metal Fillers, and Miscellaneous Finishing Materials.

MODERN APPLICATION METHODS:
Spray Painting; Dipping and Flocoating; Roller and Knife Coating; Tumble and Centrifugal Finishing; Special Processes.

DRYING METHODS:
The Drying Process—Air Drying; Force Drying; Baking by Convection and Radiant Heat; High-Frequency Baking.

PRODUCT HANDLING IN THE FINISHING DEPARTMENT:
Conveying Methods.

FINISHING PROCESSES:
Wooden Furniture and Cabinet Finishing; Prefinishing Wood, Plywood and Hardboard Structural Materials; Special Industrial Wood Finishing Problems; Finishing Paper, Cardboard and Fabrics, Finishing Plastics and Resin-Impregnated Wood; Cleaning and Surface-Treating Metals; Finishing Automotive and Railway Equipment; Finishing Sheet Steel Products; Finishing Iron Castings; Finishing Aircraft; Rubbing and Polishing Organic Finishes.

SOME GENERAL CONSIDERATIONS:
Good Practice in the Finishing Department; Testing and Evaluating Finishes.

The price is $8.50 and to eliminate bookkeeping we ask that cash accompany order. Sold on a money-back guarantee. Money refunded promptly and without any questions if you are not satisfied.

INDUSTRIAL FINISHING Magazine

1142 North Meridian Street **Indianapolis 4, Ind.**

which can be located anywhere in the plant area, preferably in a separate building, where materials are mixed and pumped to 60-gallon material tanks equipped with motor-driven agitators to prevent settling. Each tank is the starting and ending point of its circuit, from which the paint is pumped, and to which the surplus returns.

Cleans Compressed Air for Spray Guns

The Black Mfg. Co., Baltimore, Md., announces the development of a new utility air conditioner that is excellent for use with medium production spray guns. This new air conditioner, Black Arrow Model N9600, handles 35-cu. ft. per minute at 80-lbs. pressure. It is made of materials that do not rust, with no die cast parts or through bolts used in its construction. There are no moving parts, and no parts that take replacement.

The cylinder tube is cold impact extruded aluminum capable of withstanding 1,000-lbs. per sq. inch. The filtering element is wholly constructed of brass, and the regulator body is forged brass with a stainless steel air valve assembly. The regulator cap is equipped with a stainless steel insert to eliminate freezing of pressure regulating key.

The utility model air conditioner comes equipped with one oxygen-type regulator and gauge showing regulated air pressure, one outlet for regulated air, one outlet for mainline pressure, and a draincock at the bottom for daily draining of moisture and oil.

New Metallic Finish

As a substitute for cadmium plating, a new metal-hard finish called Super Aluminum Baking Enamel has been introduced by The Industrial Division of Standard Varnish Works, 2600 Richmond Terrace, Staten Island 3, N. Y.

This material has high abrasion resistance. It is adapted to either spray or dip application. Recommended uses include bed springs, filing cabinet drawer tracks, electrical fixtures, and all metal surfaces that are subjected to metal-to-metal abrasion.

Steam Cleaning Gun

Oakite Products, Inc., 32F Thames St., New York 6, N. Y., offers the Oakite Solution-Lifting Steam Gun, Model 481, designed to facilitate volume cleaning operations in industrial plants.

A feature of this gun is its ease of handling. The gun, with an overall length of 5-ft., is so balanced that it may be used over extended periods without tiring the operator.

Steam and solution hose are con-

Free speed, 1000-rpm.; load speed, 700-rpm.

Your Signal! **9-8-7-0**

CLEAR METAL LACQUER

For

silver, cadmium, zinc, copper, brass, aluminum.

OUTSTANDING

1. Adhesion to metal surfaces
2. Resistance to sulfur tarnish
3. Resistance to oxidation
4. Resistance to perspiration
5. Resistance to abrasion

Pale in color. Takes 100-200% reduction. Dries under 15 minutes.
A premium product — priced at ordinary lacquer levels.

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5206 HARVARD AVENUE
CLEVELAND, OHIO

FOR BETTER PAINT BONDING

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PHOSCOTE

Paint Strippers
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Paint Booth Coatings
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Paint Coagulators
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Cleaning Compounds
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Phosphating Materials
—
Drawing Compounds

A new type Phosphating Cleaner

- Phosphates as it cleans—excellent cleaning action, eliminates necessity of cleaning prior to phosphating operation.
- Phoscote may be used for treating both steel and aluminum.
- Produces an evenly dispersed phosphate coating resulting in better paint adhesion.
- Is non-toxic, non-corrosive and has a mild pleasant odor.
- Phoscote is economical to use due to low using-concentrations, ease of application, and extreme efficiency of the material.

Rust Removers
—
Rust Preventives
—
Degreasing Solvents
—
Grinding Compounds
—
Cutting Compounds
—
Forging Compounds

Samples and further information supplied on request.

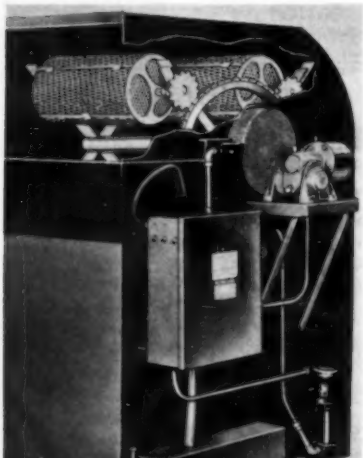
CHEMCO PRODUCTS COMPANY, Inc.
7740 WEST 47TH STREET **LYONS, ILLINOIS**

nected to the gun by swivel joints and remain stationary when the gun is rotated, thus eliminating twisting of hose lines during the cleaning operation. A safety feature is a reinforced rubber apron backing up the steam valve and other hot fittings to protect the operator from burns.

It develops sufficient vacuum to discharge cleaning solutions to a height of over 12-ft. to permit rapid, thorough cleaning of large equipment surfaces.

Tumbling Degreaser For Small Parts

The Tumbling Rotomatic, an inovation in conveyorized vapor degreasing equipment, is adapted to the cleaning of small parts, of plain or intricate shapes.



Tumbling containers of small parts are rotated while in and out of degreasing solvent.

The tumbling basket is rotated by a small spur gear which in turn rotates on a large ring gear. As the reel rotates, the tumbling baskets are in turn rotated around this ring gear as it goes down into the vapor; and still tumbling they come up on the other side. Each tumbling basket is fitted with a tubular shaft with a spring stub-shaft carried on one end for loading and unloading, making these tumblers readily removable by merely compressing the spring and removing the tumbler.

The Phillips Mfg. Co., 3409 Touhy Avenue, Chicago 45, Illinois, is the manufacturer.

Satin Black Finish For Aluminum

The Duralac Chemical Corp., 84 Lister Ave., Newark, N. J., announces a new finish called Adheron Satin Black. Adheron may be used as a primer under nitrocellulose lacquer or under synthetic baked finishes. It may also be used as a satin or semi-gloss finish for aluminum and other non-ferrous metals.

Metal Cleaner and Phosphate Coating

A new cleaning and phosphate coating material for use on steel and iron products to provide a base for paint coatings, is announced by Detrex Corp., Box 501, Detroit 32, Mich.

This material, known as Detrex 79, is a yellow noncorrosive cleaning compound in dust-free form. It is used in heated water solutions at low concentrations for the production of a light crystalline phosphate film on metal parts.

This combination of removing light dirt and oil, and at the same time depositing a phosphate coating on the

for Efficiency and Economy . . . . use

NAZ-DAR ROLLER COATING MACHINE

New Improved Model
For Printing Flat Sheets

With this machine the coating is deposited at great speed, with perfect uniformity and with more economy than is possible by any other method. Almost any rigid or semi-rigid sheet material may be coated such as cardboard, wallboard, metal, wood, glass and heavy paper. A machine of this type will quickly pay for itself in material and time saved.

Paints, varnishes, lacquers, enamels, synthetics or any type of finishing material may be used.

Write for folder giving complete information, data, etc.

The **NAZ-DAR COMPANY**

469-483 MILWAUKEE AVENUE IF-1-49 CHICAGO 10, ILLINOIS

SPEED-O-LAQ INTRODUCES . . .

CLOR-O-LAC

"A Chlorinated Rubber Coating"

A Sensational NEW Quick-drying Finish for Wood and Metal . . .

SPEED-O-LAQ PRODUCTS

CLOR-O-LAC offers merits heretofore unknown! Spray application air dries in *3 or 4 minutes* to a high gloss! Ideal also for roller coat or dip application. CLOR-O-LAC is highly resistant to alkalis, gasoline, grease and extreme weather.

Give your wood and metal products this beautiful, glossy finish that is tougher and far longer-lasting than ordinary applications. Available in clear or any color. For further details write:

THE SPEED-O-LAQ PRODUCTS CO., INC.

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OR
SMALL
Young & Bertke
OFFERS YOU THE BEST
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To the left is a large conveyor type oven for baking finish on steel chairs.

To the right is a small multi-purpose oven for a variety of finish baking needs.

Young & Bertke engineers are prepared to build you ovens of any size, any capacity, to best fit the individual needs of your plant layout and product. Years of experience in successfully solving all kinds of finishing problems are your best guarantee that a Young & Bertke Oven will give you low-cost, efficient service.

Write us today about your finishing needs.

The YOUNG & BERTKE Co.
OVENS • PAINT BOOTHS • AIR HEATING UNITS
1124 HUSTED AVE. - - - CINCINNATI 14, OHIO

cleaned metal base, has the merit of reducing cost, time, number of operations in set up of surface preparation for painting.

No special equipment is required for application of Detrex 79; the solution may be used in open tanks or continuous washing machines, especially the spray type, either single or multiple stage. Time required in either mechanical or still tank processing is one minute spray contact or immersion for a desirable phosphate coating. Use of chromic acid after phosphate treatment is optional. Field tests have not revealed the need of chromic acid treatment.

The parts come from the process with a clean water-wet surface that dries to a typical uniform blue-gray finish, either in the air or blow-off following the cleaning process.

A chromic acid rinse is not necessary after "Detrex 79" treatment.

Dip-Wash-Rinse Tank

A 16-gauge hot-dipped galvanized steel tank for general washing, rinsing and dipping operations is announced by RiteWay Products Co., 1241 Belmont Ave., Chicago 13, Ill. The tank is 64-in. long, 18-in. wide, 14-in. deep, and has two compartments. A second stock size is available in a single tank 32-in. long.

All joints are electrically welded and a channel-type flange adds to the rigidity.

Slip-on legs (no bolts or screws) hold the tank at a convenient working height of 32-in. The legs may be adjusted to uneven floors and can be shortened for special purposes.

Each compartment has a drain equipped with a chain and rubber stopper. The drains are threaded for conventional ¾-in. pipe coupling and may be connected to regular drain systems.

WABASH PRODUCTS COMPANY

16TH AND HULMAN STREETS

TERRE HAUTE, INDIANA

SIMAX

THE FINISH THAT LASTS

Industrial Finishes

Lacquers Enamels Sealers

Stains Varnishes Thinners

Synthetics, all types

I. C. D. FORMULA NINE

NON-INFLAMMABLE

« *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

EASY TO APPLY—NO AFTER CLEANING

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings from any surface or material . . costs less to use . . saves time, labor and material.

BRUSH CLEANER I. C. D.—Non-inflammable brush cleaner works fast . . does not injure nor loosen the bristles. Easy to use . . leaves the bristles clean as a whistle. Order a gallon can and convince yourself.

ORDER TRIAL GALLON AT DRUM PRICE

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Remove..PRODUCTION LINE DUST · LINT and SAND PARTICLES

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Speed Up Your FINISHING PRODUCTION LINE with this Soft Tacky Cloth

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ELECTRO COLD STRIPPER

▶ Cleanly and quickly removes all paints, enamels, synthetics or wrinkles. The finish literally "pops off."

▶ Permits refinishing in minutes—not hours. Especially effective on hard-to-remove baked-type finishes.

▶ Non-inflammable. Non-injurious.

Write for sample and quotations, or order 5 gallons at drum price.

ALLIED FINISHING SPECIALTIES CO.
2641 W. Grand Ave., Chicago 12.

Alkaline Metal Cleaners For Aluminum & Steel

The DuBois Co., Cincinnati, Ohio, announces two new alkaline metal-cleaning compounds — "Terj" and "Ferro-Terj." Terj is a metal cleaner designed for removing light shop dirt and for use in industrial washers when cleaning aluminum. The cleaner will not pit, corrode or discolor aluminum when used in a spray washer.

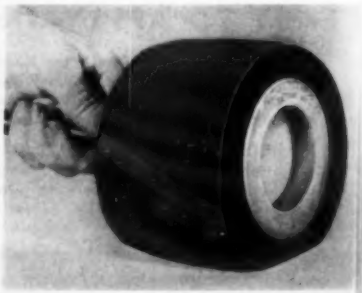
Ferro-Terj, a heavy duty cleaner is designed to remove tenacious soils such as drawing compounds from steel parts. It is a completely solventized detergent for use on ferrous metals.

Both cleaners are free-rinsing. They leave no deposits on finished work to interfere with subsequent painting.

Nu-Matic Sander Wheel Unit

The Nu-Matic sander is a new power tool wheel unit using standard-type abrasive bands to smoothly sand curved, irregular surfaces or contours, as well as flat areas. A pneumatic rubber drum is inflated at low air pressures (3 to 10-lbs.) for adjustment to suit work requirements.

The manufacturer, Nu-Matic Grinders, Inc., 8316 Woodward Ave., Detroit 2, Mich., states that varied



Abrasive band on inflated drum; flexibility.

For fine decorative finishes use —

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"World's Largest Producer of Pearl Essence"

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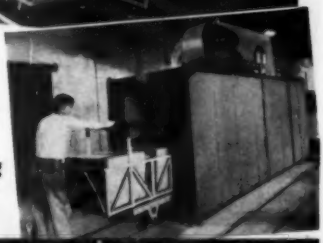

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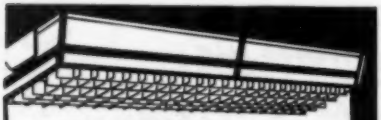

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on MORE LIGHT
and it's BRIGHT LIGHT
for Fluorescent Light Fixtures

DURALAC'S
POLY-NAM
SYNTHETIC ENAMEL

For FLUORESCENT LIGHT FIXTURES, high reflectivity is mandatory. Specify POLY-NAM bright white—Duralac's great new synthetic enamel.

As the name implies, POLY-NAM has many applications—in white or colors. Especially on POLYSTYRENE and other difficult-to-finish plastics. On metals, too, and masonite.

Production Facts: Baked finish—10 minutes at 300°F;—no discoloration at 350°F. Air-dry—dust-free in 10 minutes; handle in 2 hours. Result: high gloss—excellent depth.

SEA-LAC

Write for samples on your own letterhead.

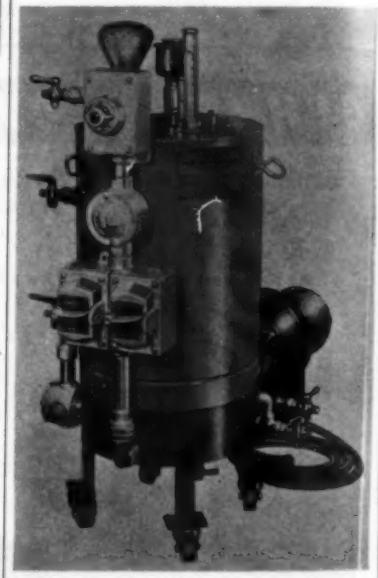
DURALAC
CHEMICAL CORPORATION
84 Lister Ave., Newark 5, N. J.

speeds, adjustable drum compression and the use of a wide variety of abrasive grits give Nu-Matic exceptional flexibility and permit an almost infinite variety of finishes.

The abrasives are standard and of band type, therefore they can be changed instantly. The rubber drum is 5-in. in diameter and takes abrasive bands 3½-in. wide. It is shatterproof and is constructed for heavy duty and long life, yet, due to a light aluminum core, it weighs only 2-lbs.

New Paint Heater

Reliable Products Mfg. Co., Inc., 123 DeKalb Ave., Brooklyn 1, N. Y., announces Model E Reliable Viscolator for pre-heating synthetic enamels and lacquers. It is an electric auto-



Heats material before it is sprayed.

NEW IMPROVED FILLER

In keeping with our policy to "better the best"--we have developed a new, improved filler which we believe has great advantages over the old types.

This new filler, will not turn gray in the pores. It is easy to wipe--does not settle like old type fillers--does not bleed and provides excellent adhesion.

It fills pores perfectly in either the overnight or four hour types.

We know you will find it to be eminently satisfactory for large scale--economical production.

The Gilbert Spruance Company

RICHMOND AND TIOGA STREETS

PHILADELPHIA 34, PENNA.

IT'S NEW

THORNTON'S Heavy Duty ELECTRIC BURNING KNIFE

A rugged, long-life knife with self-rest, heavy bronze ventilated blade. 6-foot Underwriter's cord. Knife point heating element furnishes constant even working temperature.

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matically-controlled unit capable of heating material up to 200° F. (higher if desired) in about 20 minutes. At elevated temperatures the viscosity of the material is reduced so that less thinner is needed. Pre-heating makes it possible to apply more material with fewer strokes of the spray gun.

The unit is constructed of sheet steel; it is well insulated and is provided with double safety thermal switches. The temperature of the paint and liquid in the Viscolator is indicated by thermometers. It is explosion proof; comes in three sizes—7-gallons, 15-gallons, and 25-gallons per hour.

Pump for Finish Liquids

A gearless pump for the industrial handling of liquids, is announced by Eco Engineering Co., 12 New York Ave., Newark 1, N. J., manufacturers of pumps for the industrial and marine fields.

The new Eco gearless pump includes several special features which make it ideal for the handling of a wide range of liquids and viscous fluids. Chief among the improvements is the new dual eccentric piston design which gives a strong flow against pressure. It is available in four sizes.

Dip Finish for Zinc

United Chromium, Inc., announces the development of Unichrome Dip Compound 95, which is used to produce corrosion-resisting conversion coatings on hot dipped zinc, plated zinc, and zinc die castings. Depending on the degree to which Compound 95 is diluted, one of the following finishes is produced: 1) On zinc plate a clear bright finish that looks like chromium or an olive drab finish; 2) On zince die castings, a clear, bluish finish or an olive drab; 3) On hot

dipped zinc, a bright spangled finish or an olive drab; 4) On all zinc, a coating which serves as a base for paint, lacquer or enamel.

Typical of the parts now being given the bright chromium-appearing finish are ice skates, refrigerator shelves, screws, hinges and fan guards. Parts being finished in olive drab include die cast automotive fuel pumps and carburetor bodies.

Further information on Unichrome Dip Compound 95 may be obtained from United Chromium, Inc., 51 E. 42nd St., New York 17, N. Y.

Fills Small Holes in Metal Castings

Applied with an ordinary putty knife, free-spreading Alvin Lab-Metal fills blow holes, sand holes, surface blemishes and rough or porous places in metal castings. It hardens in minutes to a strong permanent bond that can be sanded to a perfect feather edge, ground and painted without requiring heat or special tools.

Alvin Lab-Metal safely seals joints, cracks, gaskets, fills cracks and solders over bumps, rope welds, holes, pits and gouges. Can be thinned with any regular lacquer thinner and brush painted or sprayed on; will not shrink or crack; is waterproof and rustproof. A product of Alvin Products, Inc., 22 Houghton St., Worcester 4, Mass.

Anderson Represents Glidden's Chemical & Pigment Div'n.

Robert B. Anderson has been appointed Chicago sales representative for the Chemical & Pigment Division of The Glidden Co. At present Mr. Anderson will maintain his headquarters at his home at 14935 S. Avers Ave., Midlothian, Ill. His background includes sales and technical service work in the paint field. His experience makes him well qualified for the efficient handling of Glidden products to the paint and allied industries.

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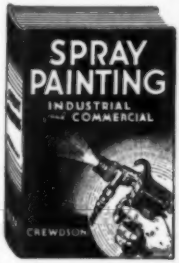

This new book covers the fundamental principles of spraying technique, together with the latest developments and practices of this craft. Covers common paint pigments, paint extenders, enamels, oil and spirit varnishes, shellac, lacquer, synthetics, all types of modern air guns, spraying technique, spraying standard materials, spraying defects, their cause and remedy, flock and suede finishes, striping and lettering, pearl lacquer finish, also automatic spraying, electrostatic spraying, agricultural spraying and automobile spraying. Ends with the sprayers "Ten Commandments."

INDUSTRIAL FINISHING

1142 N. Meridian St. Indianapolis 4, Ind.

Industrial FINISHING Editorial

Pattern for 1949 Salesmanship

The time has come to go out and sell the product. The easy lush days of sitting back and accepting an order are over. Selling is not only the most expensive division of business, but it is probably the most important, for there is little use in producing any product if it cannot be sold at a reasonable profit. What is to be the *new pattern* for selling in these highly competitive, fast moving times?

Selling has gone through several changes in pattern. At one time in the past, the salesman who was a good spender, and who had vast experience in the art of entertaining, got the business. Only a scant knowledge of the product was a requirement. The first world war finished this off.

Then came the era of friendship and service. The more friends a salesman had, and the more service he rendered, the more business he got. This pattern has continued more or less to the present time. During and immediately after World War II it was necessary for every buyer to know someone who could and would supply materials while there were serious shortages in practically all products. But most shortages are over now.

What will be the new pattern? Certainly it will embrace some elements of all past patterns, for there are certain fundamental laws of salesmanship that are unalterable. Judicious entertainment of buyers and others in influential positions in business, friendliness, and reasonable service have always been and will always be the core of real salesmanship. These are necessary.

It is a safe prediction that any new pattern will place more importance on *greater knowledge of the product, what it is made of, how it is made, and what service it will perform under any and all circumstances. Equally essential is a broad knowledge of the customer's business to determine how the product will render better service to the prospective customer.*

In the new pattern of selling there will be no place for the order taker. High cost of selling plus the high cost of traveling eliminates all but the really efficient individuals.

Keep Employees Alert About Fire Hazards

★ One of the most hazardous places in industry would seem to be an oil refinery. With all of the highly inflammable materials, under various pressures, vacuums, and high boiling temperatures, these potentially dangerous liquids are handled with the ease and almost matter-of-factness that one would use in taking a glass of drinking water. In contrast to this, the average finishing department is a real fire hazard. This may seem to be out of line, but let us check into it.

In the manufacture of gasoline and other by-products of crude oil, including paint thinners, every man who works on any of the operations has been indoctrinated and shown by practical demonstration the causes and the combinations of conditions capable of starting a fire or explosion and how to avoid these conditions. He is shown by actual demonstration how and what to do and when to do it if

with all of this precaution, a fire does start. This is essential training.

Through training and through subsequent refreshers, every man working in a refinery is always on the watch and can be counted on to avoid or remove hazardous fire potentialities. All of this refers to skilled, semi-skilled and common labor.

Now let us take the average employee in a finishing department. The common laborer is hired and put to work without knowing much if anything about the scope of his work or the potential hazards in the department. He isn't instructed where to find or how to handle fire-fighting equipment, or what to do if a fire does start near his work. In a fire emergency, he will be a hazard himself.

Now let us take the individuals who work at spray booths, dipping tanks, flow-coaters, roller coaters, ovens and conveyors. Open cans of thinner, rags with thinner in worker's pockets, overalls more or less splattered with paint, oil, thinner or remover are left in the plant overnight. You may find used wiping rags on the floor (they missed the container when thrown), floors streaked with lumps of paint and wet with thinner. A man with clothes splashed with inflammable materials may be careless with matches or smoking while in the rest room. Then there are cans of thinner near areas where static electricity is waiting to spark at any time.

Yes, these direct users of inflammable materials are apt to have some idea of the potential fire hazard, yet

---

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even they may not have been taught exactly what to do in case of a flash fire, which can start as a result of any one of several causes. Management in the plants that have finishing departments, although it deserves a pat on the shoulder for being production minded, seems to be less concerned about fire hazards and the training of all employees in fire prevention, fire protection and fire fighting.

A small plant or a large plant must have men who are all capable of using fire-fighting equipment; but unless management teaches its workers by actual demonstration, the plant is going to be in constant danger of damage or destruction by fire.

In large and small communities, some member of the fire department personnel will be glad to explain about fire hazards and what precautions to take to avoid having a fire. Your insurance company would jump at the chance to do the same. Is management willing to start action in this direction? The answer should be found in the statistics on fires during the past year.—*N. Abramovice.*

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Chicago Technical Conference March 14-17

Plans already well under way for the 1949 Chicago Technical Conference and Production Show at the Hotel Stevens on March 14, 15, 16 and 17 call for a "What's New" theme. Since the conference and Production show are sponsored by the 55 affiliated societies making up the Chicago Technical Societies Council, the "What's New" theme will cover a wide range of subjects such as equipment, methods, materials, shop practice, processing, management, research, plant facilities, etc.

Approximately 50 nationally known speakers will bring their latest thinking and experience to the many subjects to be considered by the Conference. Details of this great program are being worked out so that the subjects will be of interest to the supervisory personnel of industry as well as to the members of the 55 affiliated societies.

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Early Warm-up for Production Start

During these cold winter months, how is the morning start in the finishing room? Slow? With the mercury low in the thermometer the parts are cold, the paint or lacquer is cold and stiff the same as the operator's hands. Things are bound to be slow. But there is a remedy.

One manufacturing concern has found the answer. The night watchman turns on all unit heaters at four o'clock each morning. By 7:30 the finishing room, the equipment and the product are comfortably warm. They installed paint heaters in the lines, between pressure tanks and spray guns. The watchman turns on the paint heaters just before he leaves work at seven o'clock in the morning. Net result: a quick start and steady production.

Check Your Lights for Cleanliness

When were your electric lamps, fixtures and reflectors cleaned last? Anything that runs on day after day, performing the service for which it was installed, without trouble or breakdown soon becomes a thing that is taken for granted.

It is natural to assume that when the switch is snapped, the light goes on. Just as long as this happens without interruption, little attention is given to the source of light. But the question is, how much light is the lamp actually delivering? How much is dust and dirt, smoke and smog, reducing the rated efficiency of your lamps? In and around spray booths, how much film is being deposited on the lens of explosion-proof lights by overspray?

Over inspection stations plenty of light is required for the work per-

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formed, and these lights are usually kept clean. With inspectors, light is part of their business. It is absolutely necessary to detect rejects.

Therefore it follows that it is only sensible to check the lights at the operating stations, the source of all rejects. Clean the lights, reflectors and lens thoroughly. Then if there is not sufficient light for the type of work being done, either the number of lights or wattage should be increased. Proper light is essential in all manufacturing operations, and particularly the finishing end of the work.

The Safety Factor in Finishing Rooms

★ World War II with its greatly increased industrial productivity showed manufacturers the need for more information and greater use of safety engineering and safety methods. Industrial safety has become so important that training courses are carried on by many of the engineering colleges. During the last three years more than 50,000 top men from industry have studied safety engineering. Industrial establishments of all kinds can ill afford to ignore the fundamentals of safety engineering in the planning and operation of their business.

In no industry are the safety factors more fundamental than in finishing rooms. The reason is obvious. The highly volatile materials—stains, naphthas, thinners, lacquers, etc., can be dangerous not only to the physical premises but, if not properly stored and handled, they can be injurious to the workmen.

In going through a finishing room of a large plant recently I was shocked to see the poor housekeeping —uncovered cans of finishing materials and numerous other violations

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of safety factors. When these items were pointed out to the finishing foreman he replied, "We haven't had a fire here for ten years". This company has been very fortunate. They are just ten years late in having a disastrous fire.

Check the following items; then take a look at your finishing room and see if you can qualify as having a safe place in which to work:

1) Ventilation: Do you have adequate exhaust fans so that fumes and vapors are properly removed?

2) Housekeeping: Are fireproof containers available for used rags, and are they used? Clean floors? Clean materials? Clean finishing booths? Are the sprinkler heads clean and clear?

3) Storage: Are materials properly stored in fire resistant compartments? Where a central system of material supply is not used, only enough material should be kept in the finishing room to satisfy the daily needs.

4) Extinguishers: Extinguishers of the proper size and type should be located at strategic positions; they should be regularly tested and all personnel should be trained in how to use them.

5) Other Factors: Only copper scrapers should be used for cleaning spray booths, as other metals can start a spark.

The use of fusible links and metal covers on all dip tanks is a "must". Train the personnel to be "Safety Minded". Floor maintenance; rough and slippery floors should be repaired. Use of hand creams by personnel is helpful. All combustibles should be kept away from heaters. Smoking should be strictly prohibited in the finishing room. Insist upon the use of fire doors and barriers for protection against adjacent fires, and

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Industrial Engineers Appoint Eastern Representative

Continental Industrial Engineers, Inc., 176 W. Adams St., Chicago 3, Ill., engineers, designers, and manufacturers of complete industrial plants, special machines and production lines, ovens and dryers for the metalworking, paint, varnish and chemical industries, has appointed the R. W. Richards Co., Ridgewood, N. J., as its Eastern representative.

DuPont Moves Plant Managers

Transfers involving the managers of three plants of the Finishes Division of the DuPont Co. were announced recently.

E. J. Macfarlan, manager of the plant at Fort Madison, Iowa, was transferred to South San Francisco, Calif.

P. J. Griffin, plant manager at South San Francisco, was transferred to Everett, Mass.

H. F. Bodin, manager of the Everett plant, was transferred to Fort Madison.

to confine fires that have started to small areas. Also, see that there is periodic inspection of the complete finishing department.

When the personnel knows they are working in a safe clean place, it is an advantageous factor for both the workmen and the employer. Given more confidence, the workmen will do a better job and increase their productivity, and the quality of work they turn out will be improved.—*William B. Leil.*

Know What to Use And How to Use It

Directions for the proper use of materials that are delivered to any finishing department should be considered profitable reading; yet too often these directions are read hurriedly or only in part. They may be overlooked entirely by the busy foreman or worker who feels sure that he knows how to use the material and that these printed directions are only for beginners.

Alert foremen in the finishing field should recognize the importance of studying directions thoroughly, both as an introduction to new products and for more efficient use of familiar

materials. Insofar as these directions apply to the work at hand, the foreman can then explain details to his men. Some employees do not take time to read carefully, while others fail to grasp the full meaning of what they have read.

The run-over or spilling of materials on the outside of containers may make directions difficult if not impossible to read. Keep the labels and directions clean so they can be read or referred to any time.

By keeping a file of direction-labels, the man in charge will often save time and annoyance when re-ordering materials and supplies. The exact name of the material, and the name and address of the manufacturer or distributor will be available, even on items not purchased for some time. In addition, studying the directions, making comparisons, and setting up shop procedures will be simplified by the finisher's file of directions.

Identification of materials should not be difficult while they are being used directly from their original containers; but when bulk supplies are divided into smaller units, confusion and possible error may result.

In a magazine for employees, one of the leading railroads told about its system for speeding up operations in the tool room. Among the worthwhile ideas was this one: "Dispensing cans are painted various colors to indicate the contents, such as oil, soap, disinfectant, window cleaner."

This idea could be used to fit the finishing department's requirements. While colored containers would not take the place of detailed directions for use, they would make possible a degree of sureness, speed and safety in the identication and use of materials that have been removed from their original containers.

Bede Products, Inc., Announces New Office and Factory

James A. Bede, President of Bede Products Inc., announces the opening of a new office and factory at 4311 Ridge Road, Cleveland 9, Ohio, for the manufacture of hot spray equipment. This new location will combine both office and manufacturing facilities under one roof. Technical equipment is being added which will contribute to the company's research on finishing problems at elevated heat.

Atlas Powder Co. Announces Personnel Changes

According to E. H. Bucy, general manager of Atlas Powder Co. industrial finishes department, several recent changes have taken place in the sales force operating in the vicinity of the Stamford, Conn., plant.

Kennard M. Andersen, one of the company's representatives in the metropolitan New York area for the past year, has taken over the territory covering western New York State. Before the war Mr. Andersen had been a technical service representative for an industrial finish manufacturer for seven years. During the war he served aboard a landing craft in the Pacific.

Robert A. Stevens, a member of the sales force for the past three years, has moved into the territory covering the central and northeastern sections of New York State. John S. Brundage is now representing Atlas industrial finishes department in eastern Connecticut. Mr. Brundage came to Atlas in 1937.

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TEST-SAMPLE OFFER:
5 gallons shipped prepaid with money-back guarantee
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Streamlining and Modern Design

The design of any product is probably just as important as the materials from which it is made. Certainly a lot of attention is being directed to design these days. Most manufacturers are design conscious. They want to get rid of the old look and take on the new. That is an excellent idea, provided it is carried out with some degree of moderation.

Today there is much talk of supersonic speeds, reduction of wind resistance. The man in the street calls it streamlining. Designers have become inoculated with the idea. As a result we have all sorts of products from teaspoons to teakettles and chairs to casseroles, streamlined — sometimes to the detriment of the product. There should be a happy medium, a middle of the road policy in design. Products such as airplanes, automobiles and boats should be streamlined, for they move swiftly through air and water. But ultra streamlining of products not made for speedy travel is not neccessary or desirable.

Modern styling is designed for greater usefulness. It features simplicity, elimination of fussy ornamentation and sharp corners. This might be called "streamlining;" but it is one thing to design a product in the modern manner, and quite another to give that product the appearance that it is liable to take off at top speed any moment.

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Oldroyd Becomes Sales Manager of Oakite's Industrial Division

Announcement is made by Oakite Products, Inc., New York, of the appointment of Frank L. Oldroyd as Sales Manager of its Industrial Division.

Mr. Oldroyd has been associated with the Oakite organization in the servicing of its specialized industrial cleaning and allied materials for over 15 years, having spent 11 of these years as an Oakite field service territorial representative in various sections of the country. Subsequent promotions found him acting in the capacity of Division Manager in the company's divisional offices in Atlanta and Chicago for a period of 2½ years; then as special Field Sales Manager for a year prior to his most recent appointment.

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Stille-Young Corp. Moves Office and Plant

The Stille-Young Corp., manufacturer of industrial finishing materials, has moved its general offices to 2752 N. Clybourn Ave., Chicago 14, Ill. The company is also completing installation of new equipment and enlarged facilities in its plant recently purchased in North Chicago.

These moves are part of the firm's expansion and modernization program, designed to improve service and to permit the addition of other materials to the Stille-Young line.

Clor-O-Lac, Fast-Drying Durable Enamel

A new, quick-drying hi-gloss finish for wood and metal is announced by the Speed-O-Laq Products Co., Inc., 2386 Wycliff St., St. Paul 4, Minn., manufacturer of paint products.

The new product is Clor-O-Lac, a chlorinated rubber coating. Clor-O-Lac dries to a high gloss; dries in three or four minutes after spray application.

Adjustable for spray, roller coat, or dip application, Clor-O-Lac gives wood and metal products a beautiful glossy finish that is tough and long-lasting. The finish is highly resistant to alkalis, gasoline, grease and extreme weather.

Who's Who in Engineering; Milton A. Glaser

Mr. Milton A. Glaser, Technical Director of the Midland Industrial Finishes Co., Waukegan, Ill., has recently been listed by the Engineers Joint Council for inclusion in "Who's Who in Engineering". Only top-notchers in the profession are selected for the Blue Book which is compiled through the cooperation of national, state, and local engineering bodies.

Included are only those of acknowledged professional eminence. Only 7% of the graduate engineers in this country have been accepted for "Who's Who".

Editor's Note—Mr. Glaser has written a number of articles for INDUSTRIAL FINISHING Magazine.

Tests of "Duranite H" Shown in New Folder

A recent folder issued by the Industrial Finishes Department of the Atlas Powder Co., makers of Zapon products, with plants in North Chicago, Ill., and Stamford, Conn., outlines the field results and laboratory tests, extending over a 2-year period, on its new organic finish "Duranite H."

Substantiating figures taken from the folder show that by actual comparison tests this new Zapon finish possesses startling properties. With perfection rated 10.0 and failures 0., in the tests, which was 100° to 110° F. for 56 hours, Duranite H scored 10.0. Using the same method of rating the folder states that heat resistance, which was five hours at 400° F., showed that in impact adhesion, 0.55-lb., ¼ ball, Duranite came off with a high rating of 10.0. An average rating on all tests showed Duranite H to have made 8.42, as against an average of 7.25 by ceramic.

G. Morrow Joins C. W. Haynes Laboratories

George Morrow of Bridgeport, Conn., has joined the sales force of the C. W. Haynes Laboratories, Springfield, Mass., to cover the Southern Connecticut territory, where he formerly represented another finishing materials concern.

Old timers will remember Mr. Morrow as the magician who attended various Plating Conventions throughout the country. He has been a member of the A.E.S. for over 20 years.

Classified Advertising

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For excellently-rated woodworking company located in Central New York making high-quality furniture. Applicant must have thorough knowledge of finishing materials and latest factory production methods, with experience in matching special colors. Immediate opportunity. Write stating age, education, experience, references, present employer and salary desired. All inquiries confidential. Address IF-609, care Industrial Finishing.

WANTED.

Experienced finishing room foreman for plant manufacturing bedroom furniture specializing in walnut and bleached mahogany finishes. Give age, experience, and previous connections and salary expected, if possible. Address IF-602, care Industrial Finishing.

CHEMIST WANTED.

Metropolitan Area. Industrial coating manufacturer desires chemist with knowledge of baking enamels, wrinkle, synthetics and lacquer coatings. State background and salary in full, first letter. Our men know of this ad. Address IF-603, care Industrial Finishing.

INDUSTRIAL PAINT SALESMAN

Prefer man acquainted with furniture trade or user of lacquers, stains, etc. All replies will be held in strict confidence. Please give full particulars of past experience, age, etc. in your reply. Address IF-611, care Industrial Finishing.

CHANGE FOR THE BETTER!

An experienced New York or New England industrial finishes salesman, with customers who believe him—can do much better for himself with a really fine line of synthetics and lacquers that back him up with service to match. Such a salesman can get an interesting offer for his services from a firm that's going places. Write for an interview with MR. R. ABLON FINISHES INCORPORATED, 84 Waydell Street, Newark 5, New Jersey.

LACQUER CHEMIST WANTED

By Massachusetts manufacturer of Industrial Finishes. Man capable of formulating industrial coatings, lacquers, synthetics and stains. Experience in stain formulation desirable, but not essential. Our organization knows of this advertisement. Address IF-604, care Industrial Finishing.

SALESMAN WANTED.

Excellent opportunity for industrial coating salesman. Experience helpful but not essential. Persistence and determination to sell a quality lacquer will guarantee your success under our expansion program. Territories available: W. Va., Va., Pa., N. C., S. C., N. Y. and N. J. State details for appointment. Our men know of this ad. Address IF-605, care Industrial Finishing.

INDUSTRIAL PAINT SALESMAN WANTED.

We have an opening for a salesman with an established following in Ohio and adjoining states. Liberal drawing account against commission or guaranteed substantial salary. All replies will be held in strict confidence. THE AKRON PAINT & VARNISH CO., Akron, Ohio.

WANTED

EXPERIENCED INDUSTRIAL FINISHES

SALES MANAGER AND SALESMEN

for the Middle West States in connection with our new plant located at

LAFAYETTE, INDIANA

Address applications with full particulars as to age, education, experience, etc., in confidence to personal attention of Mr. O. J. S. deBrun, President, The Egyptian Lacquer Manufacturing Company, R. K. O. Building, Rockefeller Center, New York 20, N. Y.